

DECEMBER 1983

85p

Dm 5.80

COMPUTER & VIDEO GAMES

A detailed illustration of a young boy with freckles and brown hair, wearing a yellow sweater with a red and blue geometric pattern, sitting up in bed. He is focused on a computer monitor that is part of a desk setup on his bed. The monitor displays a game with a yellow spaceship. A keyboard is in front of him. To his left, a stack of books is visible, including one titled 'COMPUTER', 'MIND TWISTERS', and 'SOFTWARE'. A black and white cat with yellow eyes is looking directly at the viewer from the bottom right. A green apple with a bite taken out of it sits on the wooden surface in the bottom right corner. The background shows a window with a night view of a starry sky, a yellow crescent moon, and a large yellow spaceship. A night lamp is on the bedside table to the right.

WIN

PHILIPS G7000's IN OUR
GREAT TERRAHAWKS
COMPETITION

WIN

STEVE DAVIS
SNOOKER GAMES

PLUS

MANY FUN
GAMES
LISTINGS

**GAMES PLAYERS'
GUIDE TO
COMPUTERS**

WIN

10 ATARI VIDEO GAMES SYSTEMS
IN OUR AMAZING ACTIVISION
DECATHLON CONTEST

UNBELIEVABLE
SOFTSOLID 3D
ANT ATTACK

MADE ON EARTH

COMMODORE 64 GAMES

QUINTIC WARRIOR

Stand alone against
Sinister Crabmen and
Mangled Mutants.
Author: T. P. Watts.

RING OF POWER

Search thru' the kingdom
for the mystical ring.
Graphics/Text Adventure.
Commodore 64.
Authors:
**Fred Preston &
Bob McClement.**

SUPPLIED TO SENTIENT BEINGS
THROUGHOUT THE UNIVERSE



AQUAPLANE

Ski thru' Marine
Maniacs but beware
the deadly snapping
Sharks.
Commodore 64
(Joystick or Keyboard).
**Designer: John Hollis
& Programmer
Steve Hickman.**

PURPLE TURTLES

Turtle bobbing with
the cute Purpilius
Turtillorum.
Commodore 64
(Joystick or Keyboard).
**Authors: Mark &
Richard Moore.**



BBC PROGRAMMES MINED-OUT

Save Bill The Worm
from Certain Death.
BBC model B 32K.
(1.0 + 1.2 operating
systems only).
**Authors: I. Andrew
& I. Rowlings.**



BEEB-ART

High Quality Art/
Design program for
versatile manipulation
of the BBC's graphics
ability.
BBC model B 32K.
Author:
Dave Mendes.

THE GENERATORS

Superb Character +
Teletext Utility.
BBC model B 32K.
**By the author of
Beeb-Art:**
David Mendes.

SPECTRUM GAMES

VELNOR'S LAIR (Adventure)

Battle of Denizens of
the Goblin Labyrinth
and the Evil Wizard
Velnor.
Spectrum 48K.
**By Derek Brewster
of Neptune
Computing.**



SMUGGLERS COVE

You are caught in a
fable full of horror and
Black Beard's
Treasure ...
Spectrum 48K.
Author:
John Keneally.

TRAXX

Pilot your way thru'
the Grid.
Spectrum 48K
Designer:
Jeff Minter.



3D STRATEGY

A battle of Nerves and
Wits. Faster than a
speeding bullet!
Spectrum 16K.
Author:
Freddy Vachha.

BUGABOO (THE FLEA)

No fleas on This
Program!!
Itchy Action!!
Spectrum 48K
Author: Indescomp.



SOFTSOLID 3D ANT ATTACK

Battle the ants in the
walled city of
Antescher.
Spectrum 48K.
Authors:
Sandy White

URGENT
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QUICKSILVA
Game Lords Club
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Softsolid 3D Ant Attack Spectrum 48K	£6.95	□

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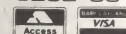
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News & Reviews

GAMES NEWS 12

We take a look at new cartridge games for the Spectrum plus a light gun for Sharpshooters.

REVIEWS 29

Our new improved reviews section looks at a hot game for the Spectrum called Ant Attack, a driving game that brought high speed 3D action to the arcades now converted for the Atari, called Pole Position and Imagine's latest Betwitched for the Vic 20.

VIDEO-GAMING 40

We take an in depth look at computer style keyboards for dedicated video-game centres, plus our regular Joystick Jury verdicts on Atari's Galaxians, Terrahawks plus many more.

ARCADE ACTION 86

We look at the machines that could revolutionise your local arcade — laser disc games. And believe us, they are amazing!

NEXT MONTH 203

Yet another look into the future.

Listings

TANK 112

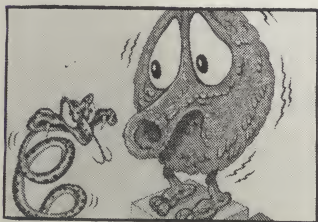
The enemy Panzer divisions are advancing — and only you can stop them. Blast the enemy tanks and save the day. Armoured action for Texas tank commanders.

BREAKOUT 120

Blast those bricks in this Spectrum version of an arcade favourite. Can you break down that wall.

CYBORG 124

So this is what happens when robots decide to play a game. Android action on the Sharp.



LUNAR RESCUE 136

The innocent Noxainians are being threatened by a warlike race. Can you help them? Atari to the rescue.

Q*BERT 140

Turn the air blue with little Q*Bert — that master of arcade abuse! Try the pyramid game on your BBC B!

PATROL SHIP 149

Wake up you dozy space pilots! There's a Black Hole right ahead and threatening to suck you in.



MOON MISSION 152

Can you save the scientists from the space pirates? Action for the BBC.

WILD WEST 162

Howdy Partners! I'm rounding up a posse to ride out and get some gold. Fancy moseying along too? Saddle up your Vic

GUNNER 170

Gadzooks sir, those devilish enemy troops are marching towards us. War games for the Dragon.



Extra, extra...

Welcome to our wonderful Christmas issue! To help you get ready for the festive season we've included a bunch of exciting competitions and puzzles which will keep you busy until well after the last of the Christmas cake has been consumed.

For those of you on the lookout for a new micro — or maybe you are buying your first machine — there's our Games Players' Guide. We look at micros old and new and give you our verdict from a gamers point of view.

Once you've got a machine you'll need to know about software. So we've also included our top ten games for each machine — selected by our review team.

We also start a brand new series called Program Extra in which we talk to the people who write the games for each issue. We ask them about ideas, programming and modifications.

Features

MAILBAG 5

More on Donkey Kong plus a moan from an Oric owner.

GAMES PLAYERS' GUIDE TO MICROS 49

Our in depth look at new and not so new machines and the games you can play with them.

ADVENTURE 82

Keith Campbell sends in the clowns!

GAMES DESIGNER 90

How to create expert games without being an expert programmer!

COMPETITION EXTRA 96

Prizes galore in our Christmas contests.

PROGRAM EXTRA 176

Our new reader-friendly feature.

BUG HUNTER 183

On the trail of gremlins in commercial software.

SEVENTH EMPIRE 184

The interstellar conflict continues.

THE BUGS 210

Well, have the Bugs gone too far?

CHARTS 213

Our top ten ratings for top micros.

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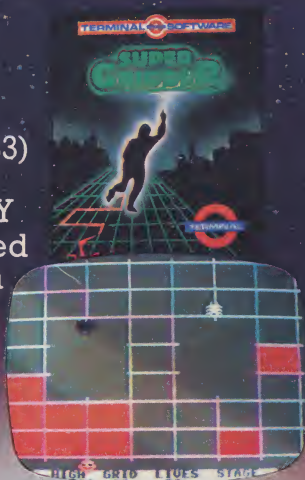
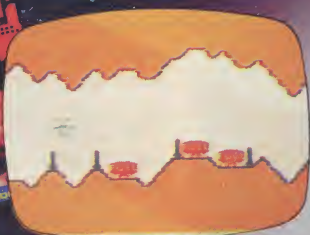
Cover illustration: Kathy Wyatt Next issue: December 16th

TERMINAL SOFTWARE

commodore 64 games cassettes

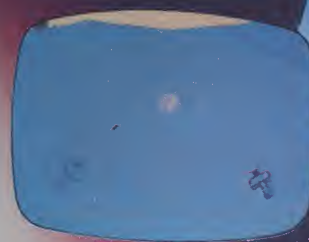
SUPER SKRAMBLE!

Personal Computer News (15-21 Sept '83) gave SUPER SKRAMBLE! an overall rating of NINETEEN OUT OF TWENTY and described it as: "Well implemented with beautifully smooth scrolling and very nice graphics."



SUPER GRIDDER

"... a compelling piece of frivolity that could give hours of fun." was the verdict of Personal Computer News (22-28 Sept '83).



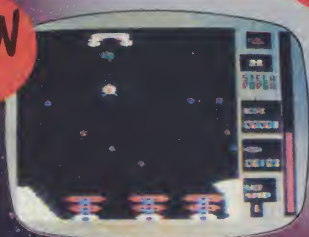
SUPER SKRAMBLE!

"An excellent game" said Computer & Video Games magazine (Sept '83).

STELLAR DODGER

A game of skill and anticipation in which you must dodge your way through asteroids to complete your mission.

NEW



TERMINAL

The first 64 games cassette to have **SIMULTANEOUS TWO-PLAYER ACTION** - realistic sound effects too.

NEW



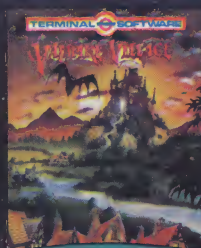
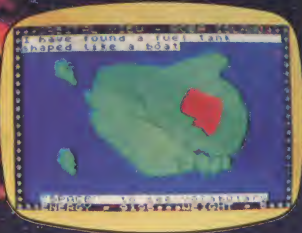
HUNTER

A fast action game in which your pursuers gain in speed and intelligence as you master each successive screen.

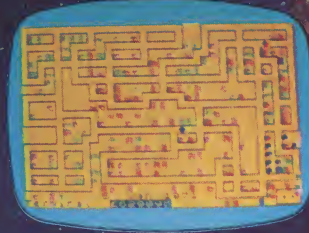
Sinclair Spectrum 48k

VAMPIRE VILLAGE and SPACE ISLAND

are REAL-TIME graphic adventures and every game is different from the one before.



CITY is a unique REAL-TIME better-than-a-board game for 1-4 players that combines simplicity of use with complexity of form as the city you build takes on a life of its own.



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Please drop us a line at: Computer and Video Games, EMAP, Durrant House, 8 Herbal Hill, London EC1R 5JB.

THE NEW DIMENSION

Dear Sir,
I would like to congratulate you on an excellent magazine, especially with October's 3-D software and drawings.

I am writing about S. Nightingale's letter in Mailbag. When I purchased my Vic-20 back in March, 1983 it worked perfectly for about a month and a half, then the sound went funny and the picture was difficult to tune. I found that the problem lay in the cable between the modulator box and the computer.

Keep up with the excellent Vic-20 games and software reviews.
David J. Richards, Beccles, Suffolk.

HOME FOR A LYNX?

Dear Sir,
I have now saved up enough money to buy a computer. I have £300 and am currently looking at the new Lynx. Would you please answer the following questions. Does the computer have sound? Is there much arcade software for the machine? And finally is there a specialist magazine for this computer?

Martin Parry, Market Harborough, Leicestershire.

Editor's reply: Yes, the Lynx does have sound. Its capabilities are very similar to most other systems on the market that use the same chip i.e. the Dragon and Colour Genie.

But, you must bear in mind that there is very little software available at the moment. Some Adventure type games have appeared, but little else to shout about. You won't really see much until the New Year if

previous computer introductions are anything to go by.

No magazine yet either — although at the rate mags keep appearing and disappearing there may be by the time this letter is printed. However a National User Group has just been set up. Contact: Robert Poat, 53 Kingswood Avenue, Sanderstead, South Croydon.

QUESTION MASTER!

Dear Sir,
I am writing to ask you a few questions about my Pet.

1) On my Pet 4032, how do I interface it to the TV? Through the user port? I have tried and failed.

2) I have found a bug in Pet's DOS, I somehow saved a program under the name "...". I cannot load or scratch it from my disc, is there any way of doing either of these things?

3) Where can I get a NPN 2N2222A transistor for an interface circuit? In my magazine it says I can get one from Tandy but they don't seem to have any.

4) If I bought an acoustic coupler, could I make my Pet talk to someone else's Pet without some special complicated hardware?

5) How do I PEEK the user port so I can make a joystick?

D. Pym and R. Pereira, Flaunden, Herts.

Editor's reply: 1) You need a special adapter to pick up the video signals. These cost about £40.00 and can be obtained from a number of places. Try: Small Systems Engineering Ltd, 2-4 Canfield Place, London, NW6.

2) Still trying to find out!

3) Try Technomatics in Edgware Road, London.

4) You'll need some



software — but that should be sold as part of the acoustic coupler package.

5) This can be achieved through Basic by addressing one of the I/O ports on the 6522 chip. It's not as complicated as it seems, and many circuits have been published in the specialist Commodore magazines.

ARCADIA UPSETS

Dear Sir,
In the October issue of C&VG I was disappointed to see that my high-score on Vic Arcadia, which is higher than two printed, wasn't mentioned. However, I understand that you probably didn't receive it in time, but what really upset me was the way Spectrum and Vic Arcadia were grouped together.

These are really two different games, the Spectrum version has more levels and a key that can halt the game while you rest your fingers. The Vic version doesn't have this feature so I think it is unfair to compare the scores between them.

Also as I don't know which machine the five listed scores have been achieved on I don't know what my target is. *Colin Lenox, Sunderland, Tyne & Wear.*

Editor's reply: You've got a good point Colin. In future we'll be asking competitors in our Hall of Fame which

machine they used when playing Arcadia and also tell you which is which in the scores section.

ALAS, POOR OLD ORIC!

Dear Sir,
I own a 48k Oric and am writing to complain about lack of games for the Oric in C&VG.

When the Snakes program was published in the June issue, I, and I'm quite sure a few other Oric owners thought there would be more games soon.

C&VG is turning into a Vic and Spectrum owners magazine with all the games and features published for them. Please realise there are special magazines for Vic, BBC, Spectrum and ZX81 owners, and none for the Oric apart from the highly overpriced Oric Owner from Tansoft.

I'm sure Oric programs come into your office, and I'm sure if you printed some of them, other people would send in theirs.

Please could you tell me if there are going to be any games or features for the Oric soon. Finally, how about having a Hints and Tips page in which owners send in tips for their machines.

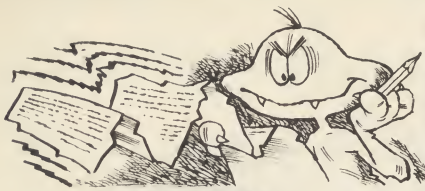
Paul Mansbridge, Brighton, East Sussex.

Editor's reply: At the moment we have NO Oric programs suitable for publishing Paul, so if you would like to send some in we would be happy to review them. That applies to all you Oric owners out there.

As for the Hints and Tips page — we feature these on our Bug Hunter page each month.

And we think that if you look at the magazine you'll find more than just Vic and Spectrum programs!





FOREIGN POLICY?

Dear Sir,
Replying to the questions posed by the Dragon 32 advert in the September 1983 (page 21): Yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, no, yes, no. And the machine I'm talking about is the Commodore 64!

The 64 may be more expensive but it has a bigger graphic screen, sprites and CP/M option. The 6510 microprocessor can access more than 64k and the user can switch memory.

Now that there is a lot of software being written in Britain for the 64, I would like to know what guarantee I have against damages during postage. The reason I'm considering buying British software is that the local dealers consider the 64 as a business machine and thus stock only business software and simple kiddies' games.

I've been reading *C&VG* for nearly a year now and I consider it a very exceptional magazine despite the 10p (M\$0.35) rise in price. My only grouse is that it arrives here one month late each time and makes it impossible to enter any of the contests. How about starting a pen-pal column so that we can contact other video gamers? *Soh Kam Hung, Perak, Penninsula Malaysia.*

Editor's reply: Well, if anyone wants to contact Soh Kam Hung, write to us and we'll pass your letters on to him in Malaysia.

SOFTWARE ENTERPRISE

Dear Sir,
I have just left school with several "O" levels including Grade A in computer sciences.

Knowing the potential of the software industries a few friends and I are thinking of setting up a software house as a job.

I wondered if you could give us any advice as to how to go about setting up the

MAILBAG

company and what we have to do.

We have several programmers and an artist, so we have several good employees already.

U Henros, Maidenhead, Berks.

Editor's reply: A good first move would be to contact the Computer Retailers Association which should be able to give you the information you need to get started in this very competitive area. You can contact them at 1 Buckhurst Road, Bexhill-on-Sea, East Sussex.

PLUGGING THE VIC

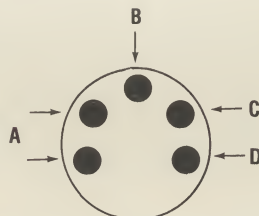
Dear Sir,
In response to Stuart Nightingale's letter in mailbag concerning Vic-20 problems.

I work in a service department for a national dealer and have had many Vic's to repair (SSSSH!)

The problem is always with the five pin Din connector which connects to the modulator, the leads come off inside the five pin Din plug. I have found this is due to the wire being too stiff and movement causes it to become loose and eventually fall off. I cure this by fitting a more flexible type of four way screened wire.

I have enclosed the wiring details below. If the yellow wire comes off then the sound goes, the red wire when it comes off usually short circuits to the screen and this being the power supply to the modulator causes the fuse inside the console to blow.

G. Westerman, Rochdale, Lancs.



A Red (+VE)
B Screen lead
C Transparent (video) lead view from rear
D Yellow (sound)

MORE HARD TIMES . . .

Dear Sir,
I am writing in reply to Stewart Nightingale's letter in October's edition of your magazine.

I was given a Vic-20 For Christmas last year. After two months it went wrong. The keyboard completely packed up. I instantly took it back to the shop where it was bought. After a couple of weeks it was returned. I gained two or three months of happy programming, but then the sound went and again returned to the shop. After a further four weeks I got my machine back this time I only had a month of programming.

On this occasion the television kept on scrolling and the keyboard did not function properly. This time it was away for two months and only after persistent calls to the shop did I get a brand new computer.

I am glad to report that I have had no trouble so far with this computer. *John Cure, Romford, Essex.*

MODEMS FOR THE DRAGON?

Dear Sir,
I have been looking through your magazine and saw adverts for modems for the Spectrum, and also an ad for Micronet 800. I did not see any mention of a modem for the Dragon 32. Please could you tell me if there is a modem available for the Dragon, or if I could use a modem from another computer if I bought an interface.

Brian Raltery, Sligo, Ireland.

Editor's reply: Micronet is currently available for the BBC B, Spectrum, Apple II and IIe, Tandy TRS80 models I and III and Pet 3000, 4000 and 8000 series. Link up for the Atari and Dragon is being considered, but nothing definite has been decided yet.



Modems are fairly standard pieces of hardware; it is only the interface which needs to be changed according to the computer being used. However, I do not know of any modems currently available for the Dragon. More information from Micronet 800 on 01-278 3143.

JET PAC PROBLEMS

Dear Sir,
Your Hall of Fame competition is a great idea, but Jet Pac should be excluded from this competition because it has a bug!

On the fourth sheet of Jet Pac there are plane-shaped objects which explode and give points. If the Jetman is positioned on the top right hand cloud, he cannot be killed.

Therefore the television can be switched off and the computer left running and your score will still be increasing. So if left long enough any score can be reached without touching the keyboard or joystick.

R. Harris, Braintree, Essex.

Editor's reply: You are quite correct, Mr. Harris. If you leave the Jetman alone, your score increases by 55 points each time a plane hits the ground. Ultimate say, that this should not happen, and will replace your cassette if you return it.

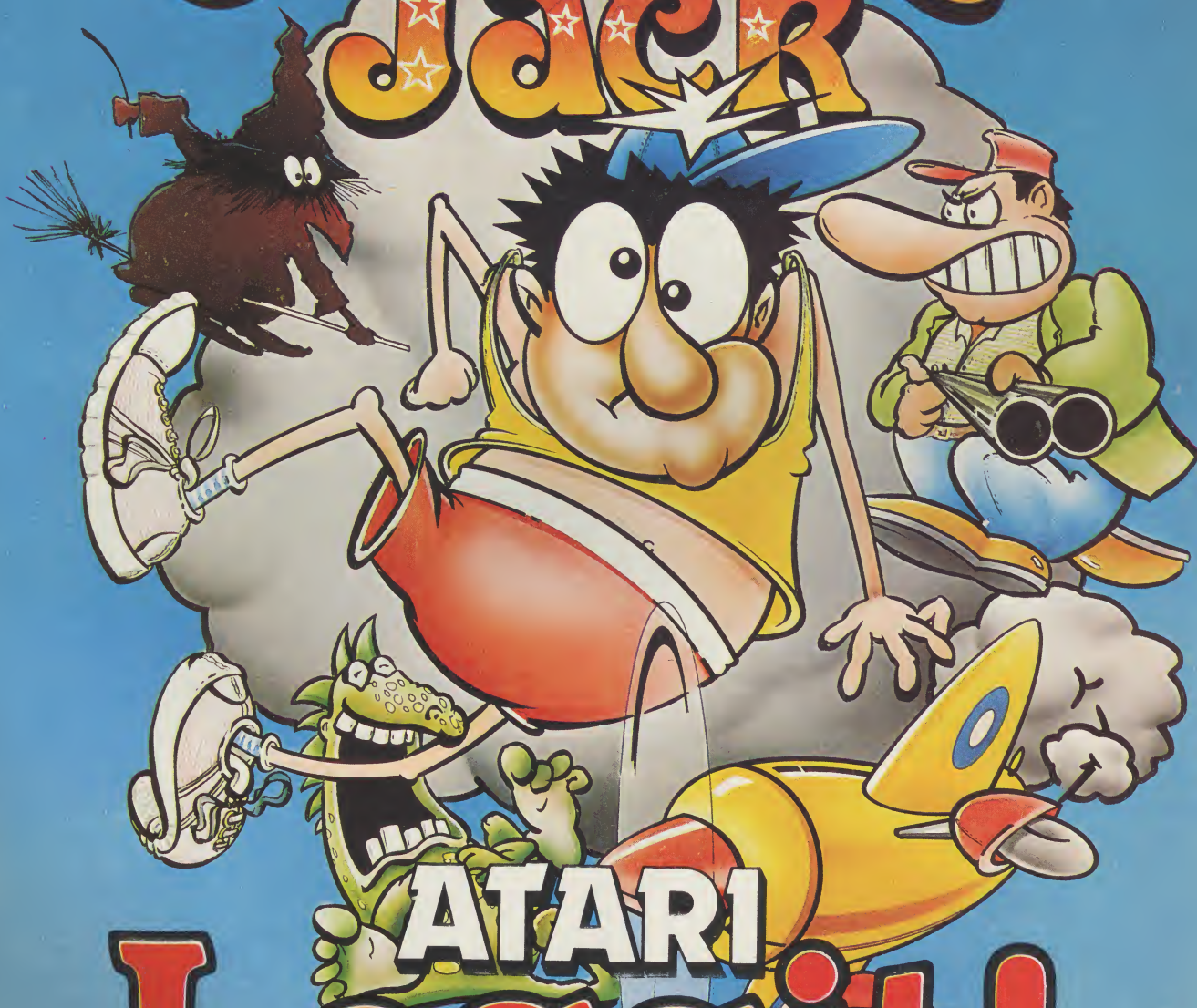
C&VG REVIEWERS

Many thanks to everyone who wrote in offering to review software for the magazine. We have been swamped with replies! We're afraid we can't write back to you all individually but your names will be kept on our files.

ONLY
£5.50

SPECTRUM

Jumping Jack



ATARI Leggit!

Atari and Spectrum owners!
On the bounce for something different?
It's the zaniest, craziest, fun-packed experience yet, twenty hazard-filled levels –
screens full of screams!
Leggit down to W.H. Smiths, John Menzies, Boots or one of our dealers
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you cry with laughter.

**..the name
of the game**

5 Sir Thomas Street
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Dealer Enquiries Contact:
Colin Stokes on 051-236 8100 (20 lines)

As your childr so can your



600XL Home Computer.

If you're buying a home computer then you've probably got one major worry. That your children will soon grow out of the system you buy.

With the new ATARI 600XL™ you need have no such fear. Because the ATARI 600XL was not just designed as a home computer, it's designed to build into a complete computer system.

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Touch Tablet. Creates complex on-screen graphics by allowing you to draw on the TV screen.

Trak Ball™ Controller. For a better and more sophisticated arcade style game control.

en get bigger Atari 600XL.



Program Recorder.



64K Memory Module.



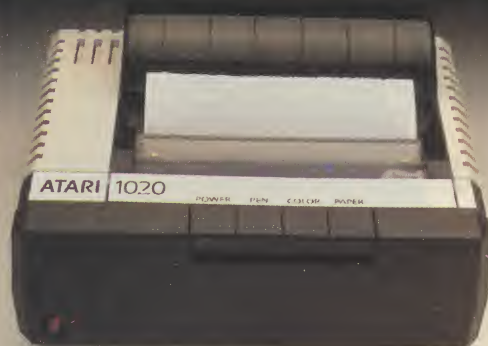
Touch Tablet.



Trak Ball™ Controller.



Super Joysticks.



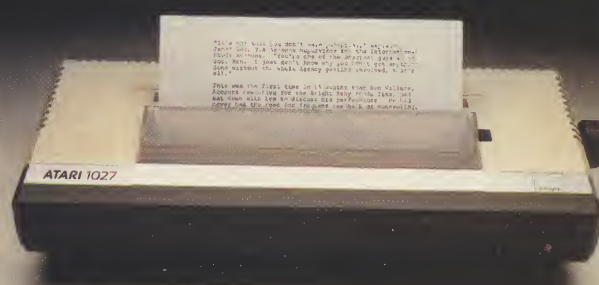
Colour Printer.



Disk Drive.



80 Column Dot Matrix Printer.



Letter Quality Printer.

Super Joysticks. Gives you a greater competitive edge over your games.

Colour Printer. You can print out your own four colour electronic designs and programs.

Dual Density Disk Drive. Increases your capability by giving you fast access to data, as well as an efficient expanded storage system.

80-Column Dot Matrix Printer. This is for more complex applications with fast telex style print-outs.

Letter Quality Printer. Changes your computer

into a sophisticated word processor, producing as many top quality prints as you want.

Of course, you won't need them all now. Your children have first got to learn to master the computer itself. But when they have, and believe us they will, the ATARI 600XL can handle it.

For more details write to: Atari International (UK) Inc., P.O. Box 407, Blackhorse Road, London SE8 5JH.

The new Atari XL home computer system.



HOW TO MAKE A RED DEVIL SEE RED

with accurate control from Suncom



Beating the game requires positive response and fast accurate control.

That's why beating the game requires Suncom from Consumer Electronics.

A range of 3 quality joysticks all with arcade-style features plus Joy Sensor, the ultimate, with precision, touch-sensitive control.

No stick to move, no resistance to movement.

Together with a range of C.E.L. Adaptor leads, they're compatible to a wide range of machines.

Check them out at your dealer—they're sure fire winners.

For details of your nearest stockist contact—Consumer Electronics Limited, Failsworth, Manchester M35 0HS. Tel: 061-682 2339.

Compatible with

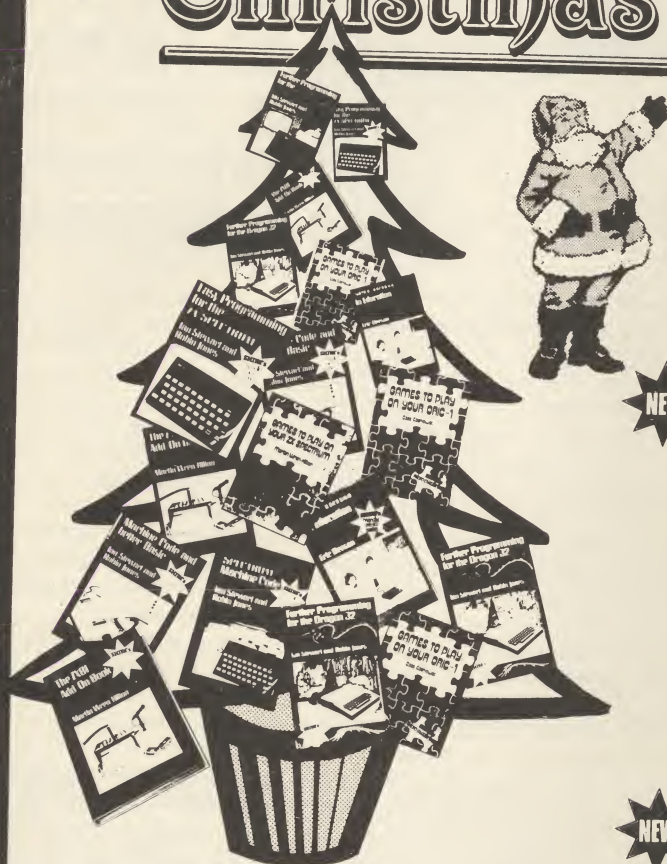
Atari CX2600 Game System*
Atari Personal Computer Systems*
Commodore 64 & Vic 20 Computers*

An adaptor (sold separately) is available for
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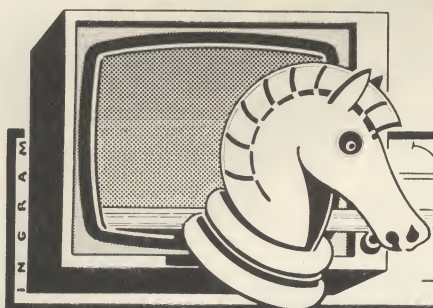
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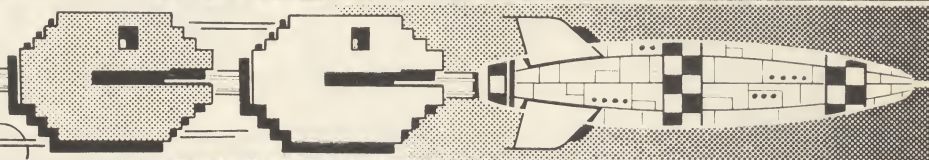
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G·A·M·E·S N·E·W·S



SALLY TAKES ON THE COWBOYS

SALOON SALLY

Saloon Sally is the new heroine of the Wild West dodging brawling cowboys and collecting the loot.

All the action takes place to the accompaniment of a zany piano tune which speeds up to match the action ending in a thundering crescendo. Saloon Sally is Psion's first game for the BBC model B.

The premier Sinclair software writers already have hit games under their belt in the shape of Flight Simulation and Scrabble.

Saloon Sally is in the shops now at £7.95 available from W. H. Smith and other software stockists.

SHOW WITH A MAGIC MISSION

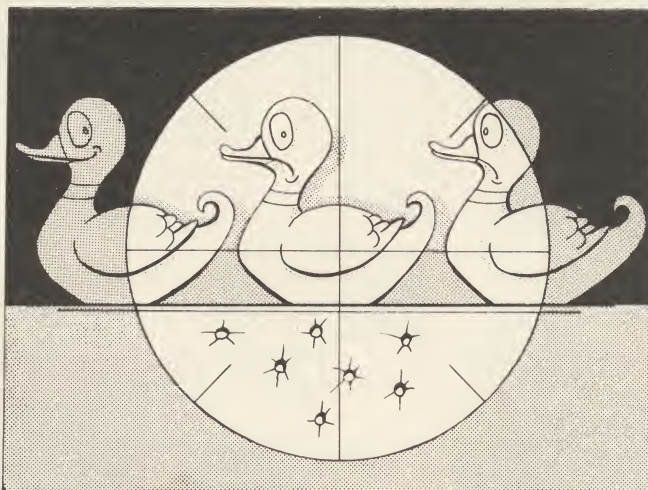
MICRO MISSION

From Wednesday, November 9 Central TV will be broadcasting from the far ends of the universe, from a space ship some 5,000 light years from Earth.

The Magic Micro Mission is a new series for young people that explores the realms of computer technology and seeks out the latest developments in computer games and applications. Central say the show will be packed with fun, jokes, colour and costumes as the ship continues on its quest, commanded by its somewhat weird Beano-reading Captain. Already it has been dubbed "the technological Tiswas".

The Magic Micro Mission will aim to demystify computers. Jargon Gobbler will explain computer terms like RAM and ROM, PEEK and POKE in simple language.

Particular emphasis will be



placed on the avalanche of new computer games coming into the shops in time for Christmas. Each week a group of five children will road-test a range of computer hardware and software and report back on their findings. In addition the *Mission* will investigate robots in both the home and in industry.

The Magic Micro Mission will be crewed by two presenters plus a computer expert Dr John Barker, Lecturer in Physics at the University of Warwick. There will also be Silicon Superstars from the worlds of entertainment and sport who have discovered the jobs of computing.

GREATEST GAME UNDER THE BUN?

MR WIMPY

It's the greatest game under the bun! So say the authors of Mr Wimpy, the latest computer game from Ocean Software.

In screen one, our intrepid chef has to assemble the ingredients for his burgers while at the same time keeping a wary eye on Waldo the burger-thief who keeps trying to steal whole trays of buns. Watch out for the moving manholes which appear at random or it's curtains for Mr Wimpy.

In following screens, the ing-

redients are placed tantalisingly on different levels and platforms. A harassed Mr Wimpy has to chase round putting the burgers together while at the same time avoiding the murderous instincts of various edible baddies.

As Mr Wimpy runs over the ingredients they drop down a level, pushing the ingredient below down a level until a whole burger is assembled at the bottom of the screen. If the pursuing baddies come too close, Mr Wimpy can always use his petter shaker to put them off the scent. Blasting them with a fist full of petter will put them out of action for a while, but if he gets cornered he'll lose a life.

On reaching the final screen, the game reverts back to screen two, carrying forward your hi-score, only this time things become more difficult. Points are awarded for assembling burgers and collecting bonus gems, cartons of ice cream and the odd cup of coffee which are dotted around the screen.

Wimpy. An interesting development here is the link between the game and the Wimpy burger chain. The cassette has the Wimpy trademark emblazoned on the inlay. Is this the start of a new wave of games with sponsors?

Mr Wimpy is controlled by either keyboard or joystick and is available from Manchester-based Ocean Software for the Spectrum 48k at £5.90.

ALL THE FUN OF THE FAIR WITH DUCKS

CAROUSEL

Now you can enjoy all the fun of the fairground without leaving your armchair. Carousel is a shoot-em-up game with a difference — flying ducks that is!

The game is a computer version of the shooting galleries found around fairs but with lots of added features.

You start the game with a limited supply of bullets which you must use carefully to shoot ducks, owls and assorted letters of the alphabet.

Carousel is for the BBC micro and will be available around Christmas from Cambridge-based Acornsoft with a price tag of £9.95.

SIMPLE WAY TO CREATE GOOD GAMES

SCOPE

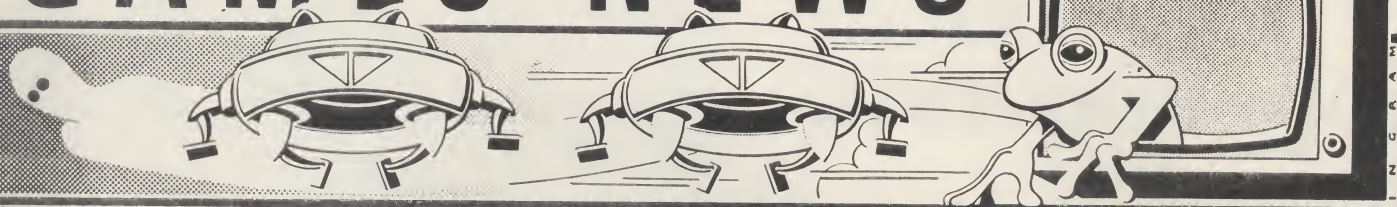
If you are trying to write a fast arcade game on the Spectrum then you can rule out Sinclair Basic.

You may like to try Scope. This is a new programming language available on cassette for a 48k machine and is, says its author, designed for writing fast arcade style games.

Scope stands for Simple Compilation Of Plain English, which gives a clue as to why programs written with it run so fast. It is a compiler, which means that when you have written your program, it is translated entirely into machine code before running. This allows an inexperienced programmer to turn out quality games.

If you think that this is a good idea, then you can buy a copy from you local Smiths'. It costs £11.95.

G·A·M·E·S N·E·W·S



CATCH A FALLING NUGGET!

GOLD RUSH

Calling all gold diggers! Strike it rich on your Spectrum.

California isn't the venue, but an exotic gold laden planet called Oron.

Working the mines of Oron is a difficult and dangerous job, the mines consist of huge bottomless caverns. The gold, which falls from the roof of the cave can only be collected in two buckets.

But these can't be moved, so you have to build a series of ledges to knock the falling nuggets in the directions of the suspended buckets.

But nothing is ever this easy and the game includes the inevitable host of alien meanies who generally give you a hard time, getting in your way and eating the odd careless miner.

Gold Rush will be released in November for the 16k Spectrum and includes joystick and keyboard control options. The game is produced by Thorn EMI and will cost £6.95.

THE WEBBED WONDER IN THE SWIM!

AQUAMAN

Never fear — Aquaman is here! But can he save Neptune's daughters?

The Old Man of the Sea's daughters have been kidnapped and imprisoned in glass cases, each one guarded by a venomous sea serpent. Set in the deeps, fathoms below the surface, it is your job as Aquaman to rescue them.

Your search for the lost daughters will lead you through a deserted underwater city and through various murky caverns where killer crabs, octopuses

lurk — and the all important oxygen carrying amoebae live!

Aquaman must collect these to replenish his ever dwindling supplies. Finally, after blasting all the amoebae, Aquaman must battle against an army of crabs.

At last he arrives in a cavern in which the captured daughter is languishing, guarded by a hissing serpent. The only way to get past this deadly obstacle is to swim back to the crabs which are littering the ocean floor, collect them and feed them to the viper. This will poison it and Neptune's daughter can be released and escorted to her Dad's palace.

Once there Aquaman's quest starts all over again and rescuing the next daughter is a far more arduous task!

Neptune's Daughters runs on a Commodore 64 with joystick control and is available from Manchester based English Software for £9.95.

THE LIGHT FANTASTIC SHOTGUN!

LIGHT RIFLE

If fairground shooting games always seem to lack a little something on your computer then Stack Computers of Liverpool have now come up with that extra ingredient.

The Stack light rifle brings the real feel of the shooting range to your micro.

Compatible with six games also supplied by Stack you can go on a Big Game Safari, pot some grouse in the Glorious Twelfth, do what a man's got to do in High Noon, shoot at the crows in Crow shoot, as well as Rats and Cats and Escape from Alcatraz.

The rifle itself disassembles to make a hand gun for use in close combat games like High Noon.

The rifle is due to be launched at the Northern Computer Fair in two weeks' time and will cost £29.95.



DESIGNER OF THE MONTH

NAME: Jeff Minter.

GAMES: Gridrunner, Attack of the Mutant Camels, Hovver Bovver, and coming soon Revenge of the Mutant Camels.

BORN: Reading, Berkshire in 1961.

COMPUTER HISTORY: Jeff learned Basic on the school Pet although was not considered the local computer whizz being denied a place on the computing course. He was not the school dunce either earning A levels in Physics, English, Maths and a university place. The academic life did not suit Jeff and he found himself carpeted by his tutor. A change of college and of courses followed soon after.

It was during his time at college number two — Oxford Polytechnic — that Jeff bought a Vic-20 and learned machine code. Looking at the software available Jeff was convinced he could do better and set out to write a copy of the arcade game Defender on his Vic. Encouraged by demand for his game Jeff wrote another one — Traxx — and took them both to the Barbican show where they sold well.

Now there was no looking back — and Llamasoft was born — named after his favourite animals.

Jeff describes the business as a small family firm "just me and my mum".

The game that really made Minter's name is Gridrunner — a super fast shoot 'em up — which is selling well in the US as well as in Britain, having knocked Choplifter off the number one slot in the American charts earlier in the year.

FAVOURITE FOOD: Liver sausage sandwiches, burgers, and most junk foods.

FAVOURITE DRINKS: Coke, Guinness, and wine.

FAVOURITE TV PROGRAMME: Not the Nine O'Clock News.

FAVOURITE COMPUTER PROGRAMS: Hovver Bovver, Repton, Stix.

COUNTRIES VISITED: America, France, Spain.

PETS: Two Siamese cats and an Afghan hound called Woody.

AMBITIONS: To write better and better games.

FAVOURITE POP GROUPS: Pink Floyd, Genesis.



Let Commodore expand your horizons.

VIC 20 is the finest home computer that money can buy.

And the better you get to know it, the more confident, adventurous and ambitious you'll become.

You'll want to take advantage of the vast range of VIC software: a superb and constantly-growing selection of programs, embracing business systems, entertainment, education and many applications in the home.

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VIC business software covers a wide range of applications, including spread-sheet analysis, stock control, information handling and word-processing.

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Learn subjects as diverse as English Language, programming, and biology.

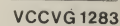
And 'home' software ranges from IQ tests to Robert Carrier menus.

In addition, there is a range of VIC software, like programmers' aids and graphics packages—

to add to your understanding and enjoyment of computers and computing.

There's even a special 'VicSoft' Club for VIC 20 enthusiasts, with many advantages including special offers to club members.





VISIONS THE LAST WORD IN ELECTRON SOFTWARE

SNOOKER VE 01 32

Visions Snooker brings all the excitement and all the tension of big time tournaments to your TV set. With an advanced program written by a 19 year old undergraduate at Queens College Cambridge, it makes Pot Black look like a load of old balls. Visions Snooker for the **ELECTRON £8.95**



DAREDEVIL DENNIS VE 02 32

So you think you could be a stuntman? Well, test your skills against these hazards and see if you're still game. There are only three different scams in this movie, so you shouldn't find the going too tough! There's no denying that the money's good, but the question you should be asking yourself is will you live to spend it? If you can ride a motorcycle — and wetbike — two of the frames should be child's play, but for the snow scenes you'll need to be of Olympic class. Dare Devil Dennis for the **ELECTRON £7.95**.



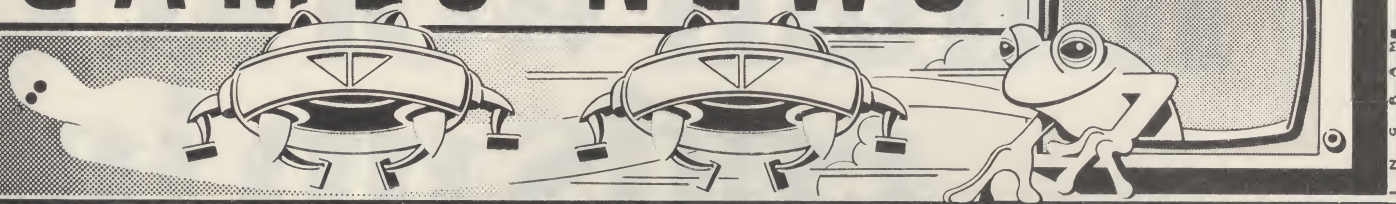
PENGI VE 03 32

Wandering around an ice flow may seem to be an idyllic way of life to some people, but my advice to such philanthropists is: try it. It's not that life out here is a bore. I mean, I lose all my aggressions kicking the hell out of ice blocks. 'Strange habit,' I hear you say; but you don't know what's going on around here. Let me fill you in. It's quite simple really. If you want to get from 'A' to 'B' around here you have to go via 'C'. This is largely due to the area's ice making machine going berserk and trying to compete with Mother Nature. This overgrown refrigerator thought anything nature could do it should better. I could live with this if it was the only problem since I'm beginning to enjoy this bizarre ice hockey. Unfortunately this is the least of my worries. The other penguins around here have been eating plankton for so long they're starting to radiate from all the trace elements they've been consuming — and I think it's affected their brains as these possessed pengis seem to hate any of their brothers who doesn't look like them — and I am not about to stay here and argue with them — anyway, whoever heard of a penguin having a conversation...

Pengi for the **ELECTRON £7.95**

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G·A·M·E·S N·E·W·S



MACK THE MECHANIC DROPS IN

MECHANIC

Mack the mechanic is much in demand in this game to repair your war battered helicopter.

Fly your chopper over mountainous terrain protecting the tanker in the bay from a bombardment of missiles fired by enemy subs.

Every time the tanker sustains a direct hit, members of the crew jump into the water to swim to the shore. You have to pick them up before they drown.

Once safely aboard fly the shivering crew back to base and deposit them in the army huts. Get Mack the mechanic to check your chopper for damage and fuel supplies.

As if this were not enough to keep you busy, one of the mountains on the island is about to erupt into a fierce volcano.

Krakatoa is the latest 48k Spectrum game from Abbex Software. Available from the London based firm now at £5.95.

Also new from Abbex this month is a Flight Simulation program for the Commodore 64. Complete with no less than nine flight controls you must take off, fly around a path of beacons and land safely again. Flight Simulation costs £6.95.

LESSON IN WARTIME STRATEGY

KNIGHTS

If someone mentions desert rats to you and you think of gerbils, then you may benefit from the history lesson contained in this latest war simulation called Knights of the Desert.

The game takes you back to the height of World War II. The brilliant German general Rommel

is pushing his Panzer divisions further and further into North Africa.

You play the part of Montgomery — Monty to the men who served under him — commanding British forces with the objective of pushing the enemy back towards the North African coast and capturing key towns such as Tobruk and Benghazi.

You can select a two player game where you command either the German forces (whose campaign is hindered by supply shortages) or the British forces (who must contend with the swiftness of the Panzer units and low morale).

The solo option the computer only directs the British forces. The game is the work of the American strategic games experts — Strategic Simulations Inc — and is imported to the UK by Centresoft of Birmingham.

Running on the Atari 400/800, Commodore 64 and Apple II it will set you back £29.95.

BEE WITH A VERY SWEET TOOTH!

BIRDS AND BEES

Knowing about the birds and the bees won't help you in this game! You play the part of a single minded bee whose one aim in life is to fill his hive with honey.

Flitting around from flower to flower happily collecting nectar he is suddenly attacked by all sorts of nasty insects who think he'll make a great hors d'oeuvres!

Your poor bee has got to avoid birds, spiders, caterpillars and make it safely back to the hive with his cargo of nectar. Should he get caught in a spider's web, he'll die — and watch out for the wandering teddy bear.

Scrolling from left to right, the game becomes steadily more difficult as the further you are from home the more nasties there are to contend with and some rapid

evasive action will be necessary to get back safely.

Beware of overloading him with nectar — this will slow him down and he's more likely to get caught wobbling home than speeding back to base.

Optional use of the Currah Speech Synthesiser is available with the Birds and the Bees which will say "Nectar" to you every time some is collected and will also tell you when you've lost one of your three lives.

You can play the game using a joystick or keyboard and it runs on a 48K Spectrum and is available from Bug-Byte at £5.95.

Also new from Bug-Byte is a graphical adventure game incorporating some 170 screens of different pictures.

In the valley live two kings, one good and one evil. The aim of the game is to steal a treasure chest from the evil king and give it to the good king. In your quest there is the odd dragon to kill and princess to rescue and help is on hand from bands of Elves — but beware — danger lurks in the guise of the Terrible Trolls.

Twin Kingdom Valley is available for the BBC and Electron for £9.50 and the Commodore 64 after November for around the same price.

DENNIS IN THE LAND OF HORRORS

DENNIS

The world's most hen-pecked husband has been immortalised on computer.

Husband of the Prime Minister, Dennis Thatcher stars in a new adventure called Dennis Through the Drinking Glass.

Your job is to guide Dennis through the world of politics helping him to avoid the horrors who haunt the corridors of power, as Dennis attempts to reach the sanctuary of the Gravediggers Arms.

All the scenes in the adventure are introduced in rhyming verse. The game package comes with caricatures of the main characters and a poem.

Ken Livingstone, Sir Keith Joseph and Norman Tebbit are included and, of course, Iron Lady makes an appearance.

Dennis Through the Drinking Glass will be available in early November for the 48k Spectrum from Applications Software costing £5.50.



Italian worker ends up in cement.



'Mario's Cement Factory' is the latest wide-screen adventure from Game & Watch, with 2 skill levels and (for super ace show-offs) a memory that remembers and keeps your highest score.

The game even

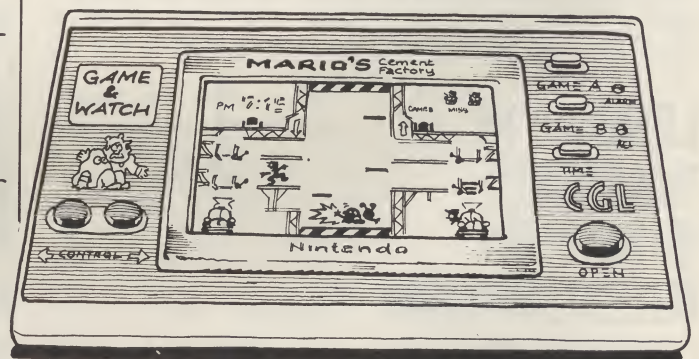
Mamma mia! Can Mario, the hero of Donkey Kong, survive in the world's wildest cement works?

Racing from floor to floor, leaping across unguarded lift shafts, Mario has to release cement hoppers before they overflow and engulf the truck drivers below.

The hoppers fill faster and faster as Mario's score mounts up — skilful players can win more lives, but one false move and it's finito!

includes a quartz clock display and alarm (that's why they call it "Game & Watch").

Get it from your games shop now — and save Mario's mates from a concrete overcoat!



THE MOST FUN YOU CAN GET IN YOUR POCKET.

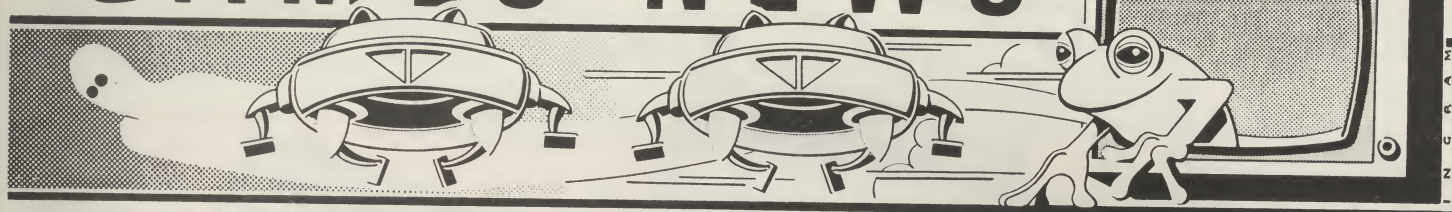
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MARIO'S CEMENT FACTORY IS JUST ONE IN THE FASCINATING SERIES OF GAME AND WATCH FROM CGL. SEE THEM NOW AT BOOTS, DIXONS, JOHN MENZIES, W.H. SMITH, TOYMASTER, HAMLEYS, JOHN LEWIS PARTNERSHIP, SELFRIDGES AND OTHER LEADING STORES AND GOOD TOY SHOPS.



G·A·M·E·S N·E·W·S



WHO WANTS TO BE A MILLIONAIRE?

MICROPOOLS

If you are tired of people telling you that micros are great fun for playing games but have few other uses then we now have the argument to nail that cynical view for all time.

This latest software package can help you and your computer win the football pools.

According to the program's manufacturers Micropools makes better forecasts of football match scores than the predictions that appear in the national newspapers.

The cassette comes complete with a user manual which contains step by step instructions on how to get the best forecasts.

Micropools is the brain child of Spencer Software of West Sussex.

The game is available now at £7.95 for the 48k Spectrum, BBC B, Commodore 64, Commodore Pet, Newbrain and the Dragon.

Should any of you C&VG readers win a million with this program then don't forget where you read it first. Any donations will be gratefully received!

£10,000 IS STILL ON OFFER!

KRAKIT

Still no winner in the £10,000 Krakit game from Artic computing.

The game attracted widespread publicity in the computer press last year when the firm announced that £10,000 was up for grabs.

The prize money is now much more than this as the interest on £10,000 is also payable as prize money plus an extra £1 for every copy of Krakit sold.

The idea of the game is to discover the bank and the city where the money is being held. If you do this Artic will fly you to the correct city to collect your prize money.

A spokesman at Artic said that nobody had come close to getting the right city yet — though the game was still selling he could not tell us how many £1s had been added to the prize money.

New games in the pipeline from Artic include a line drawn 3D shoot 'em up for the Spectrum and Snooker.

DON'T SHOOT THE WHALE — OR ELSE!

MOBY DICK

Save the Whale activists will love Moby Dick! If you depth-charge the famous big White whale by mistake in the heat of a raging sea battle the Greenpeace ship comes after you.

The idea of the game is to down the helicopters that are

bombarding your destroyer, and depth charge the subs that lurk in the deep — but watch out for that whale!

When you shoot down a helicopter be sure to catch the pilot who parachutes to safety.

Moby Dick runs on the Commodore 64 and is the latest addition to the PSS range.

Also new from the Coventry-based firm is a seven level Scramble-type game with a nuclear reactor waiting to be destroyed at the end of the winding tunnels.

Spectrum owners are also included in this new package with a game called Guardian which casts you as a space age prison warder. The worst criminals are housed in a laser grid in deepest space. It is your job to stop them escaping.

Armed with a powerful laser gun you must fly your craft with great precision around the perimeter of the prison forcing them back within its electronic walls.

The games are available now at £7.95 for the 64 titles, and £5.95 for the Guardian.

TRY PLAYING YOUR FACE YOUR WITH SPECTRUM!

A whole new world of games is opening up for Spectrum gamers following the recent introduction of the long-awaited Microdrives, Sinclair has just launched the Spectrum Interface 2.

This device, which was previewed at the PCW show this Summer, is now generally available by mail order with none of the delays associated with the Microdrive and its Interface 1.

Interface 2 connects to the user port at the back of the Spectrum and will work on either a 16k or 48k machine, and with or without an Interface 1.

It enables the Spectrum to accept software on ROM cartridge as well as cassette, and also contains 2 joystick ports.

The main feature of the cartridge facility is that the software will be built into a chip and therefore takes no RAM. This means that a program which normally runs only in 48k will now run in cartridge form on a 16k machine.

The joystick scores over its rival, the Kempston interface, as there is provision for 2 controllers while Kempston has just one.

The new Sinclair software will be available to work with joysticks, and the manual also tells you how to adapt your own programs as well.

There are ten programs available on ROM initially, six from Sinclair's own range and also four Ultimate games, including Jet Pac.

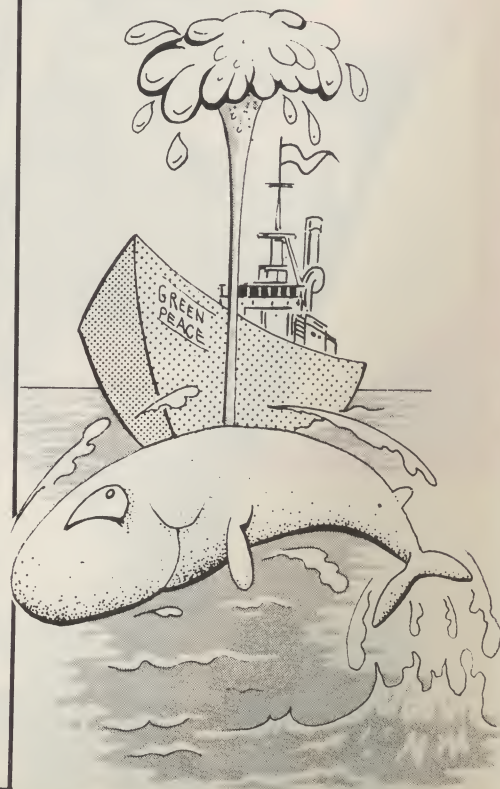
To load a program from cartridge couldn't be easier. It's a lot faster than either cassette or Microdrive but, of course, you can't store your own programs on cartridge.

You simply plug the Interface 2 into the back of the Spectrum and plug the cartridge you wish to use into the slot on the interface.

As soon as you turn on the computer, the program is loaded and ready to play. It's as easy as that!

The introduction of joysticks may turn some of the software houses away from making programs compatible with other makes of joystick. It is likely that the Sinclair official interface will become the standard.

A ZX Interface 2 will cost you £19.95, while each ROM cart will retail at £14.95. Any standard Atari type joystick will work, and you'll have to buy these separately.



The REAL Challenge!

For your ORIC or SPECTRUM

Jogger Guide your joggers across a 4-lane motorway and crocodile infested river to reach their safe haven through the gap in the fence. Each time a jogger is safely home the next one will have to encounter more lorries and cars on the motorway but fewer crocodiles and logs in the river. Full on-screen instructions. M/code, sound effects and full action colour graphics.
 Oric Author - Adrian Sheppard
 Spectrum Author - Mike Howard
 Oric 48K - £6.95 Spectrum 16/48K - £4.95.



Dinky Kong Attempt to rescue your lovely girlfriend who is held captive by the angry gorilla. As you climb the connecting ladders and move along the gangways, the gorilla will be throwing barrels and fireballs at you! The only way to reach her is to leap over these obstacles and progress to the top. M/code action with sound effects, full colour action graphics, skill levels etc.
 Author - Adrian Sheppard
 Oric 48K - £6.95

Quincy A superb dice game for 2 to 6 players. 3 throws per go to try and score points by obtaining certain combinations, i.e. 3 of a kind, a run, pairs etc. 13 go's to complete a game. The highest score is the winner! It's a game that is easy to learn but can be won by skilful and thoughtful play. Full colour graphics, on-screen instructions, bonus scores, etc.
 Author - Tony Churcher.
 Spectrum 48K - £4.95.



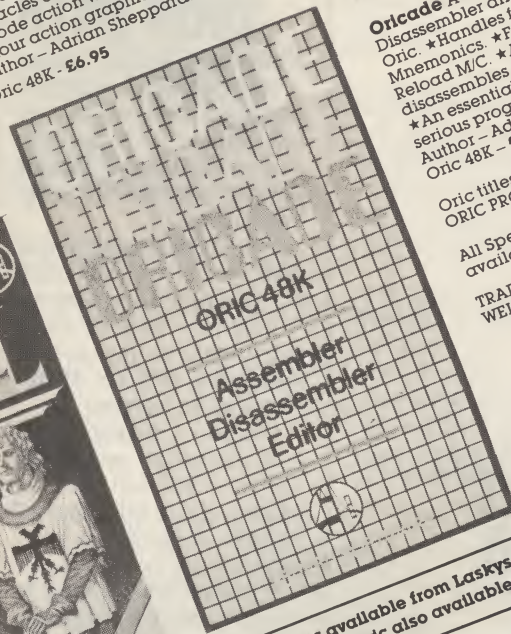
SEVERN SOFTWARE
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Grail You have been chosen to seek and recover the Holy Grail from the Castle Perilous. Throughout the course of your task you will have to use your skill, intelligence and logic (along with a little luck) as you encounter many foes. You will have the opportunity to gather weapons and armour to fight with, but if you are wounded your strength will drain away - many other features such as warp, jewels etc.
 Author - Adrian Sheppard.
 Oric 48K - £6.95.



Oricade A combined assembler/disassembler and editor for the Oric. *Handles full 6502 Mnemonics. *Features Save and Reload M/C. *Assembles and disassembles at any address. *An essential tool for any serious programmer.
 Author - Adrian Sheppard.
 Oric 48K - £8.50.

Oric titles recommended by ORIC PRODUCTS INT. LTD.
 All Spectrum Software is available on Micronet 800.
 TRADE ENQUIRIES WELCOME.



All Oric titles available from Laskys.
 Dinky Kong for Oric also available from WH Smith.



Moria A challenging adventure game set in the mines of Moria. You'll have to try and survive encounters with the monsters of middle-earth while trying to locate Durin's Ring. The Wizard and the Trader may help or hinder you on your journey to find and open the hidden doors to freedom - a game that will really test your character and staying power.
 Oric Author - Adrian Sheppard.
 Spectrum Author - Mike Howard
 Oric 48K - £6.95 Spectrum 16/48K - £4.95.

Please send me (Tick box)
SPECTRUM 16/48K

- ☐ Jogger @ £4.95
☐ Quincy @ £4.95
☐ Moria @ £4.95

ORIC 48K

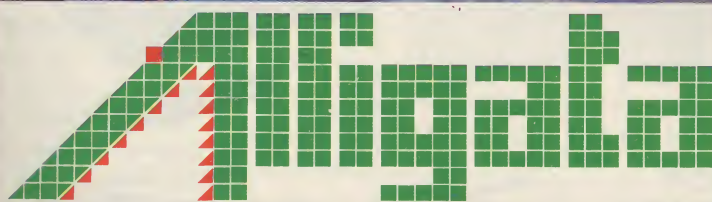
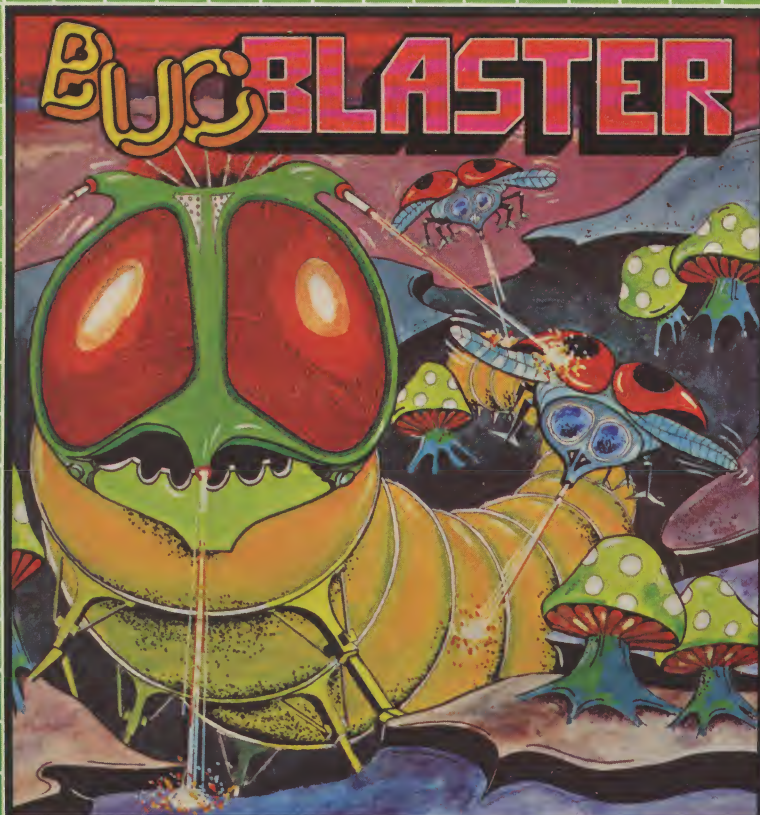
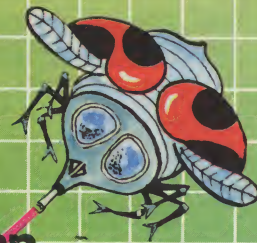
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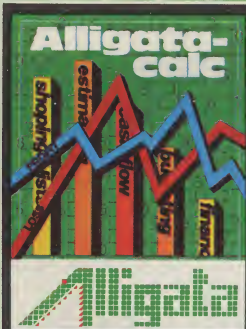


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Sensational COMMODORE OFFERS

see opposite

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A Super new computer now available from SPECTRUM see our ad for details - or call into your local SPECTRUM dealer NOW!

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SPECTRUM service centres will ensure that should your machine 'go down' we will get it running again as quickly as possible. We also offer extended warranties at reasonable prices too! - ask your SPECTRUM HOME COMPUTER CENTRE for full details

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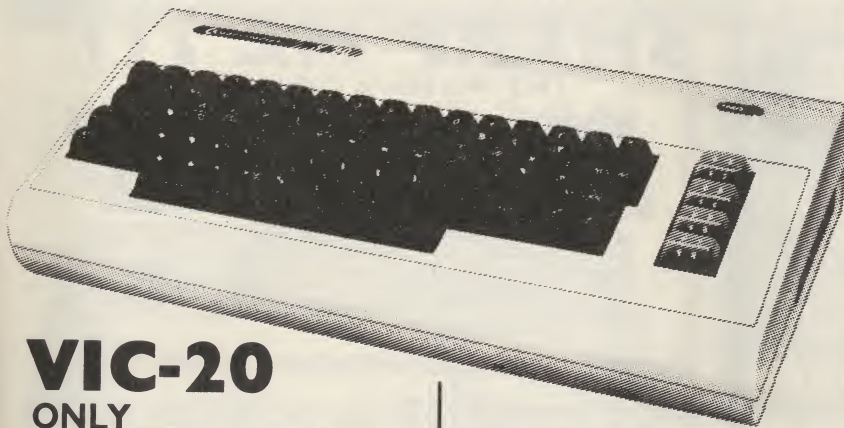
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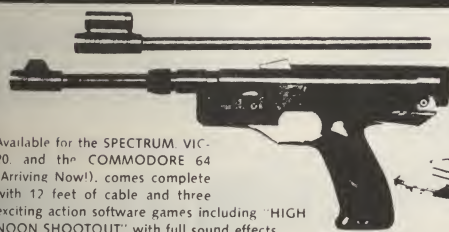
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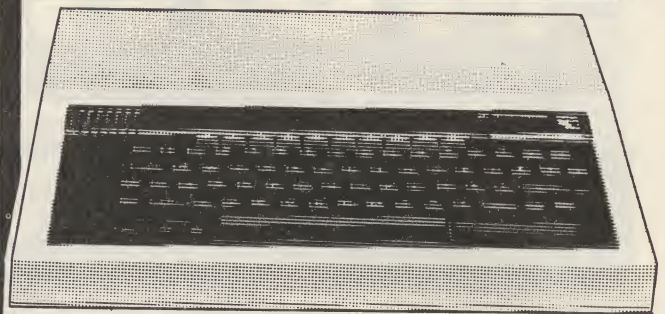


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BBC

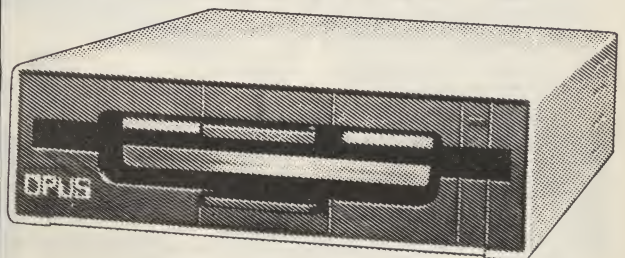


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Spectrum

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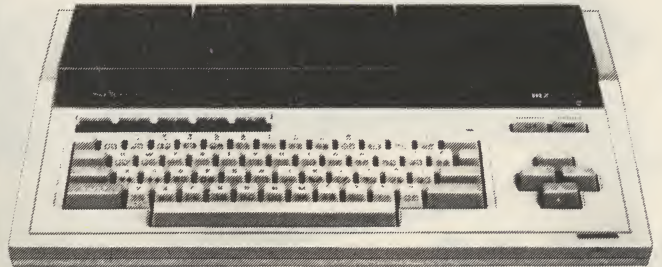
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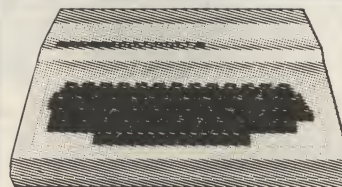
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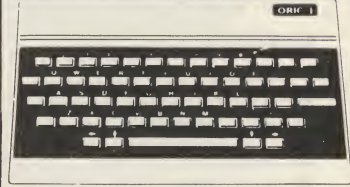


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ORIC-I



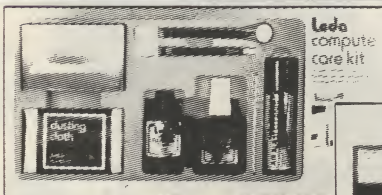
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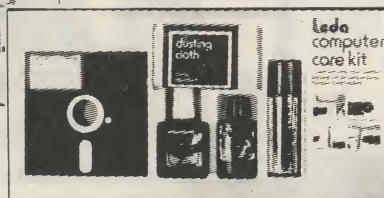
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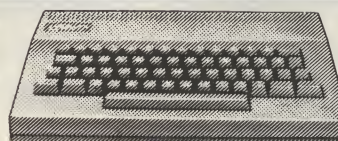
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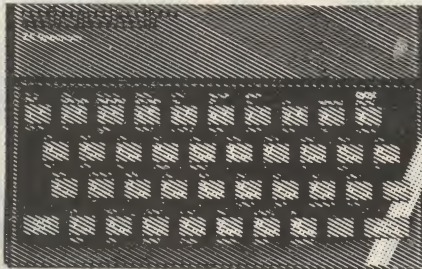
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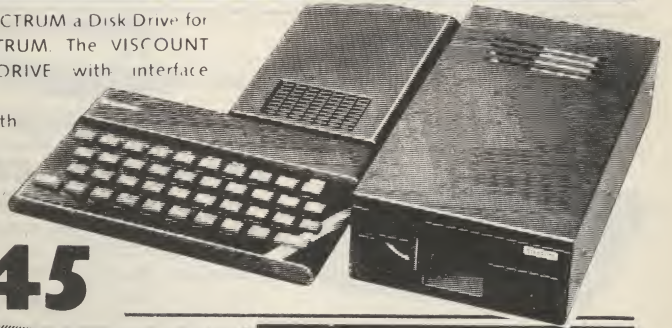
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ONLY

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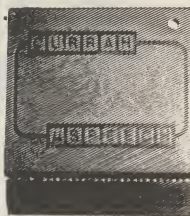
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■ Versatile modem for ZX Spectrum (16K or 48K) versions ■ Slim design fits easily, matches your micro ■ Instant access to Prestel™ & Micronet 800 information services ■ Instant communication with other ZX Spectrum users ■ Use the Prism VTX 5000 with a Sinclair printer - and print Prestel frames. Ask your local SPECTRUM dealer for further details - NOW!

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with 16K RAM pack & One piece of Software
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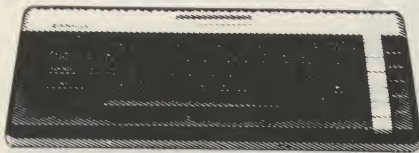
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SPECTRUM

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New! 600XL



- 16K RAM expandable to 48K
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- Full colour (256 colours - 128 colours can be displayed at one time. Ask to see this super new micro at your local SPECTRUM dealer NOW!

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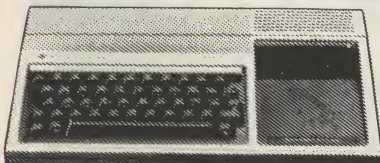
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With all these FREE extras: FREE PADDLES
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TEXAS



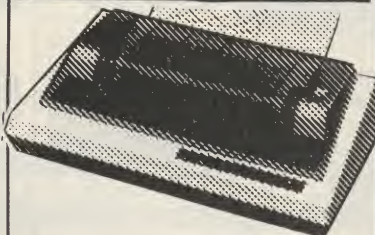
TI-99/4A

Exceptional value from SPECTRUM and representing probably the finest home micro computer value on the market today! - The TEXAS TI-99/4A is built to an extremely high standard and is highly recommended by SPECTRUM for its utter reliability.

£99⁹⁵

Wide range of software available for TEXAS from your local SPECTRUM dealer.

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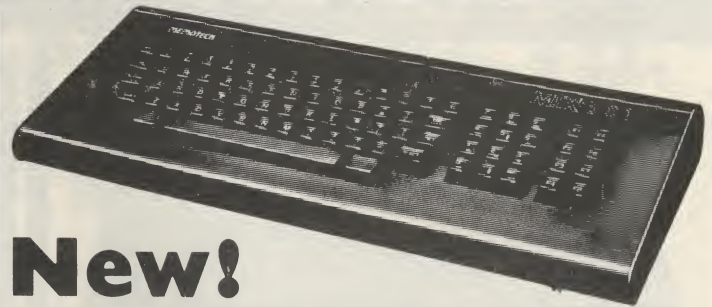
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ALPHACOM 42 At last, a printer for under £100 for the BBC, COMMODORE 64 & VIC-20, DRAGON and ATARI - Ask your local SPECTRUM dealer for full details only **£99.90**



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SUPERB VALUE AT ONLY

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MY TALKING COMPUTER

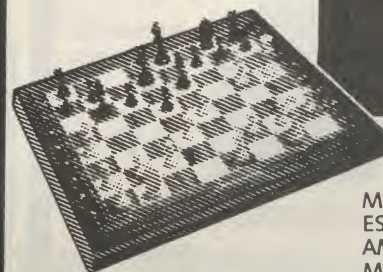
"My Talking Computer" by Electrolplay is a marvellously simple and clear children's Micro that's perfect for the younger child or the slow learner. There's a range of brightly coloured, bold programs - such as "Talking Story", "Talking Numbers" or "Talking Games" - giving a wide selection of educational AND fun games, on easy-load cartridges.



£59⁹⁵

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Models available:

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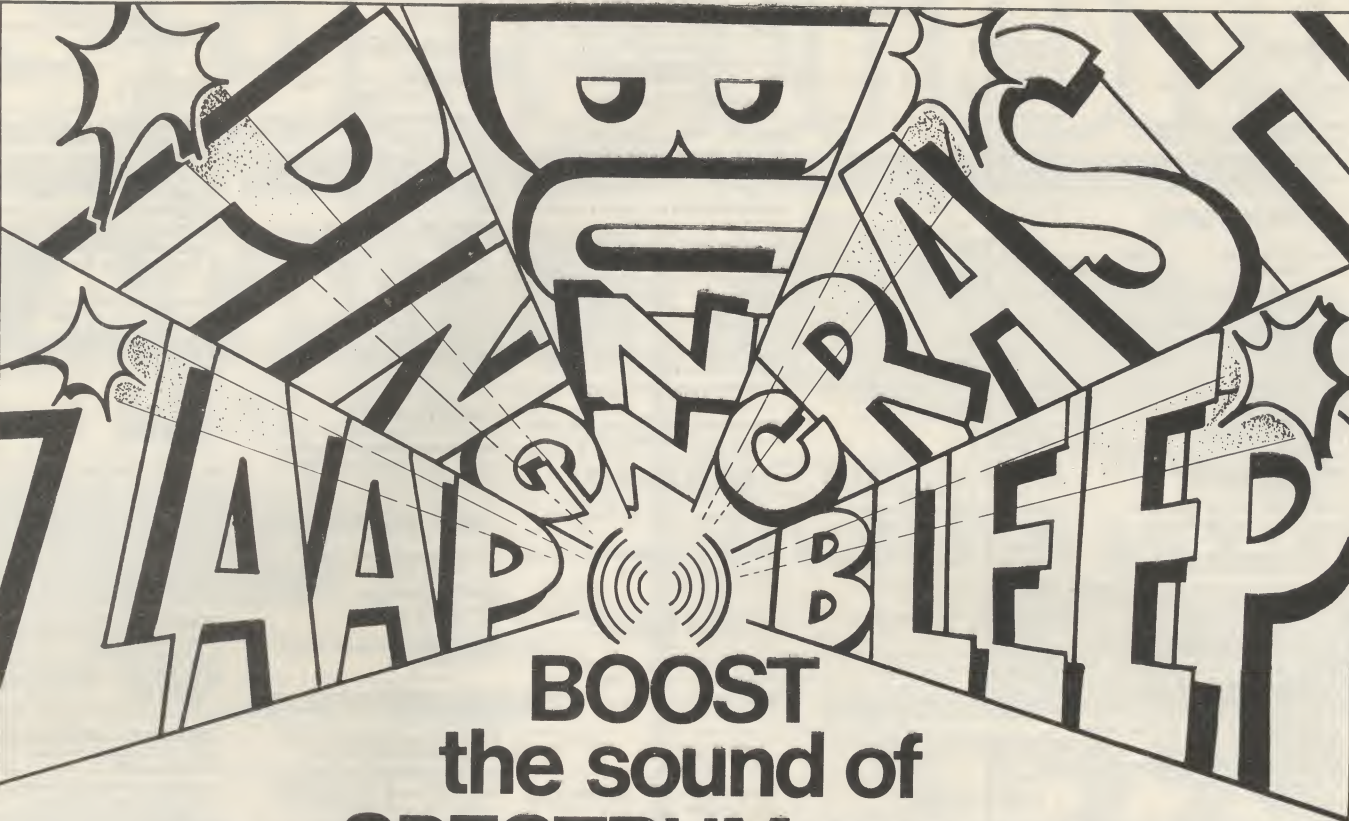
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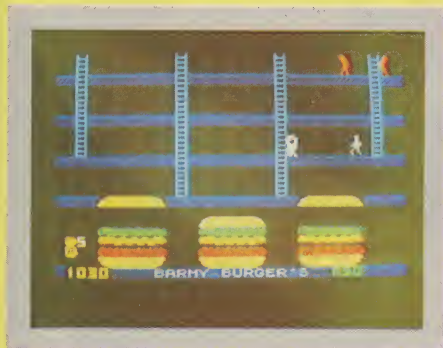
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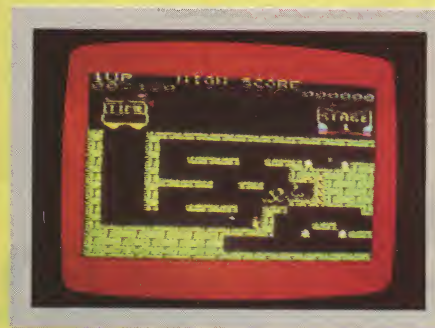
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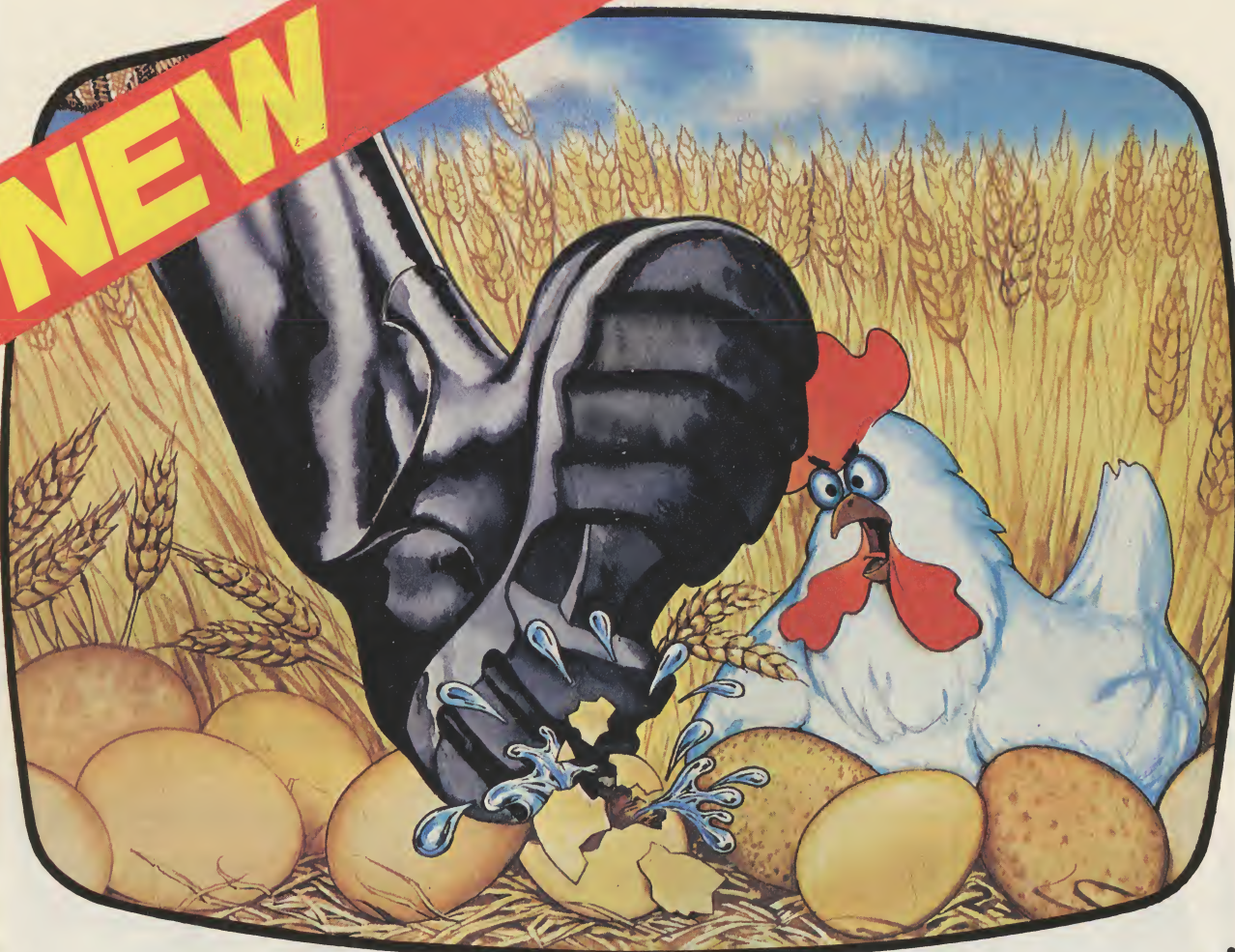


PURPLE TURTLES

Welcome to our new improved reviews section! As you may have noticed we've moved our look at what's new and what's best in the world of games software up to the front of the magazine — where it really belongs. We hope you like the new look. Meanwhile back to the games! Our Game of the Month is Zalaga, a hot space shoot out for the BBC. You'll find our verdict on page 33. We also take a look at a brand new and very original game for the 48k Spectrum called Ant Attack on page 31. Did Imagine's Bewitched cast a spell over C&VG's

reviewer? Find out on page 31. Are the Purple Turtles really cute? Take a dive into their world on page 33. If you are a Commodore 64 owner. Fancy yourself as a race-ace? Then take the driving seat for Atari's new Pole Position conversion for their 400/800 and 600XL machines on page 31. Barmy Burgers are sizzling away for Spectrum food fans on page 33 and the tomb of Tutenkham awaits Vic-20 owners on page 31. Plus a few more thrown in for good measure as C&VG continues its search for the perfect game.

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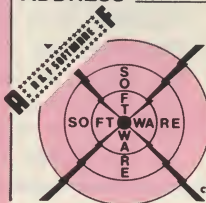
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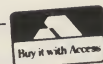
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PAC-MAN CASTS HIS MAZE SPELL

BEWITCHED

Bewitched didn't cast a spell over this reviewer I'm afraid.

I don't really want to put the game down because it has a lot of very good points, but I'm afraid I've had my fill of maze games populated with monsters.

The game, as I have said, is set in a maze. You are represented by a black key controlled either by keyboard or joystick. The joystick option is a much better bet because the game is nigh well impossible using the keyboard.

The aim of the game is to open coloured doors in the maze using your key. One small problem here the key must be the same colour as the door. Changing the colour of the key involves rushing to the top of the screen and passing through one of the four keys hanging there.

Even this doesn't guarantee success because doors often change into bricks in the maze wall.

Once you've opened the door at the bottom of the maze the screen scrolls upwards and you are faced with another expanse of maze to negotiate. There are 20 screens in all.

Considering the limitations of the unexpanded Vic 20 Bewitched, from Imagine, is quite a feat of programming. Maze games don't appeal to me but if you are a Pac-Man fan then Bewitched could be just your cup of tea.

● Getting started	6
● Graphics	8
● Value	5
● Playability	5

RACE ACES WILL LAP THIS UP!

POLE POSITION

Players of one of the year's most popular arcade machines can now sneak in an extra practice lap at home.

Following the release of Pole Position for the Atari VCS a few months ago, Atari has now packaged this game for their range of home computers. The new cartridge will run on a 400/800 machine and also on the new 600XL.

When you turn on the computer you are greeted with the



familiar Pole Position scene. The clouds are still overhead and the horizon looms in the distance. The road has changed colour, though, from grey to black.

There is a choice of four circuits including a practice race for which you don't need to qualify. You can also set the race distance to anything between one and eight laps.

When you press Start, the Atari balloon pulls the "Prepare to Qualify" message across the sky. There is no speech in this version, however.

One of the most spectacular pieces of graphics programming from arcade Pole Position are the advertising boards which whizz past. These start in the distance as small specks on the horizon and get larger as they approach. The lettering and pictures on them gradually become more readable.

Unfortunately, although the boards have been transferred to this cartridge, the writing has not. They are completely blank which makes me question their importance to the game.

There is no accelerator in Pole Position. The car has a high and low gear which you can change between at will by either pushing or pulling the joystick. Direction control is with the left and right movement of the stick, and the fire button acts as a brake.

Although this system is quite usable it cannot compare to the large steering wheel which controls the original.

At the top of the screen a timer ticks slowly down to zero. If you can finish a lap before it does so, you have qualified for the race proper. You are then lined up for the start along with five other cars.

There are not really that many other cars on the circuit to avoid, compared to Activision's new Enduro game for the VCS where the object is to pass 300 cars in a certain time.

However, this is an excellent implementation of the original and I enjoyed playing it. The car

graphics were a little unclear, but generally the game is very playable. Certainly worth the standard Atari £29.95 price tag.

● Getting started	9
● Graphics	9
● Value	8
● Playability	8

FINE TIME IN TOMBS OF TUT!

TUTANKHAM

Tutankham burst onto the arcade scene two years ago with all the promise of becoming a real ten pence piece guzzler.

It was the first game that effectively combined the elements of an adventure game with frenetic shoot 'em up gameplay. You play the part of Archie the archeologist searching King Tut's tomb for long lost treasure.

The treasure is protected by the mystical guardians of the tomb. These are an evil assortment of snakes, death dragons, crows, bats and flying cats against which your only defence is a laser gun with a limited amount of power.

The laser is only charged for a limited amount of time so you must find all the treasure and get onto the next tomb before this runs out.

You have five Archives with which you must penetrate the sixteen levels of the tomb. This is not easy and should keep you busy for several hours — I only managed to get to the third tomb after several turns.

The treasure itself is graphically superb from the red ruby rings belonging to Queen Neferiti, blue sapphire studded amulets, to the most coveted treasure of all — the Death Mask of Tutankham.

As you explore the corridors of the tomb certain artifacts will appear that you will need to proceed like the map which shows you the way through the

entire tomb, or the key which you will need to get through the doors connecting certain stages of the tomb.

Tutankham is a superb piece of software for the Vic-20 amidst the plethora of mediocre and poor quality titles being touted for this machine.

The game is available on cartridge form from Parker Brothers at a slightly prohibitive £29.95.

● Getting started	9
● Graphics	9
● Value	5
● Playability	9

AWESOME ANTS LEAP TO THE ATTACK!

ANT ATTACK

Holding my breath, I climbed over the wall and into the city. Good not an ant in sight. Spotting a lone figure on a pile of rubble and guided by her cries of "My Hero — take me away from all this" I started to lead her to safety. In milliseconds we were surrounded by an army of the nasty biting creatures and were eaten alive!

The deserted streets of Antesch are patrolled by hordes of man-eating giant ants who, guided by the scent of humans come charging to the kill. It is your job to get into the city, rescue the lone survivor and lead her out of danger.

Leaping and running from building to building is the safest way to search for the heroine as the ants can't reach you when you're perched safely above them.

Clustering around you in groups, you can blast them with a supply of grenades you carry — this will kill them but more soon come to take their place.

A scanner which flashes red

continued on page 33

THE SPIRIT OF CHRISTMAS PRESENT



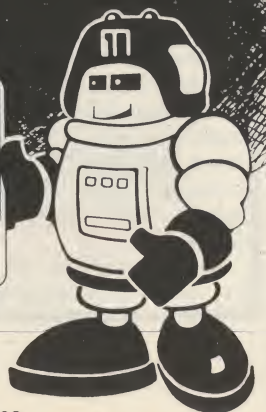
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or green tells you in which direction to search — a useful addition to the game as only a section of the city is shown on screen at any one time. The screen scrolls in whichever direction you move eventually revealing the furthest reaches of the city.

An additional feature to the game is the power to view your hero from four angles. Occasionally he'll disappear from the screen and to keep track of him, run through all the different view angles which will bring him back on screen.

Another interesting effect is the 3D graphics. If you run behind a building you'll disappear from sight as will the pursuing ants. Cries of "Bitten" will appear on screen once the ants close in and if you don't want to be eaten alive you'll have to make a run for it.

In each new level you have to search further afield for the heroine and of course there is a much greater chance of getting caught as you try to find your way out of the maze of buildings.

The ants are horrifyingly life-like as are the movements of your hero. The keyboard controls on the Spectrum are very well placed to enable the easy movement of your hero. Ant Attack is written in machine code and features high-res graphics which are among the best I've seen on the Spectrum, with hidden line removal.

Ant Attack is available from Hampshire-based Quicksilver for the 48k Spectrum at £6.95.

● Getting started	7
● Graphics	9
● Playability	7
● Value	7

BURGER TIME FOR FAST FOOD ADDICTS!

BARMY BURGERS

It's about time someone started a Society for the Prevention of Cruelty to Chefs' now that Burgertime is also available on a Spectrum.

Once again our intrepid hero is faced with the daunting task of completing the hamburgers.

The object of Burgertime, in case you've forgotten already, is to help the chef to make four

burgers, which are displayed in layers on the screen and form walkways for the Chef.

Walking over a layer makes it drop down onto the waiting bun below. You are chased around the screen by a vicious fried egg and a couple of mean sausages.

Defence against these meanies comes in the form of a pepper pot which has five shakes left in it. Peppering a nasty will paralyse it for a few seconds while you make your getaway.

This version for the Spectrum features three burgers instead of four, but the screen layout is still good.

The most annoying point about the entire game was the awkward layout of the movement keys. The game uses the cursor movement keys for control which can be confusing.

There are no bags of fries to collect in this game. These are available on the original and are useful as they boost your dwindling supply of pepper.

The version of this program currently available in the shops is version two, which has better graphics for the Chef, a title screen while loading and also a better routine for peppering.

After playing version one, which we have in the C&VG office, there are a couple of things which I think should have gone in version two. Firstly, all action stops while a layer of burger drops down a level, which can be annoying. There is also an awful mistake in the spelling of the game title itself which remains on screen at all times while you are playing. When I phoned Blaby about this and asked whether it had been corrected, they told me that nobody had noticed it before and that I was the first to complain.

Apart from all this, Barmy Burgers is a good game for any Spectrum-owning Burgertime fan. The cassette, from Blaby Computer Games, runs on a 48k machine and is available from

W.H.Smiths. It costs £5.95.

● Getting started	9
● Graphics	9
● Value	8
● Playability	7

IT'S SHELL SHOCK ON FRUIT MISSION!

PURPLE TURTLES

With bated breath I stepped gingerly on to the turtle's back — suddenly it dived and with a loud splash I landed in the drink!

Purple Turtles is one of the cutest games I've seen for a long time. The object is simple — just cross the river, using the turtles as stepping stones, to retrieve the fallen fruit on the opposite bank.

However, life isn't always easy and in this case danger lurks with every step. The passive floating turtles are often overcome with a sudden urge to dive just when you are standing on them!

Once on the opposite bank, your man picks up a piece of fruit and retraces his steps across the river to a very hungry owl, sitting in his tree he gives you a rapturous hooting welcome! There are five pieces of fruit to retrieve in each level plus a time limit to contend with.

Each successive level becomes a little harder as more than one turtle will dive at the same time. Unfortunately, you can't change direction in mid-jump and so if a turtle dives you've had it!

There are nine difficulty settings and nine speed settings which make a dramatic difference to the game. I found it impossible on the high difficulty settings to jump my little man safely across the river as at some point all the turtles are

under water at the same time.

Both the sound effects and graphics are excellent with a constant change of scenery in the background and all accompanied by a very catchy jingle.

Although not a game to set the adrenalin flowing, Purple Turtles has a certain addictive quality and I found it very enjoyable to play.

With keyboard or joystick control for the Commodore 64, Purple Turtles is available from Manchester-based Quicksilver for £7.95.

● Getting started	7
● Graphics	9
● Value	5
● Playability	6

TRUE TO THE ARCADE ORIGINAL

ZALAGA

Aardvark Software have come up trumps with their version of the arcade game Galaga.

Galaga, is based on a Galaxians theme but one that has been beautifully reworked to produce a game that's full of fast and furious action.

Aardvark's Zalaga remains true to the arcade original — apart from the name change. Nothing has been missed, not even the amazingly detailed graphics or the twinkling stars in the background.

The game begins with squadrons of aliens streaming past your laser base into formation. At this stage you can blast away without fear of retaliation, but once the creatures are in position they fire and dive at your base without warning.

Doubling your fire power is achieved by manoeuvring the ship under a ray that one of the meanies occasionally sends

Continued on page 37





the K size of the microchip memory the better the machine.

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system with the largest number of micro-chips. It's the K size of the microchips in the console that determine exactly how challenging and exciting the games are to play.

And the bigger



First there was the tennis video game, then just as you'd got that well and truly

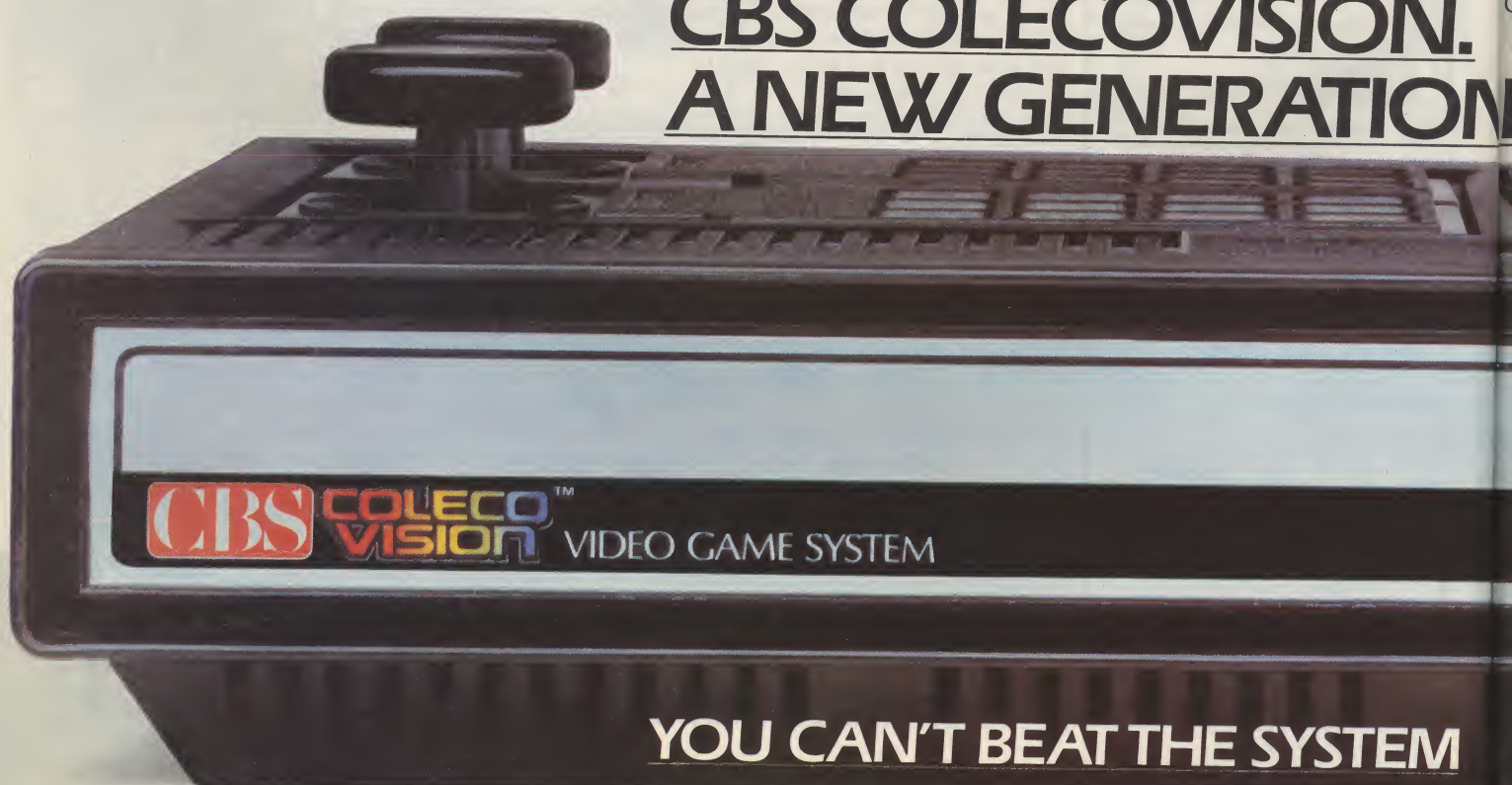


under control, along came all those Invaders from Space.

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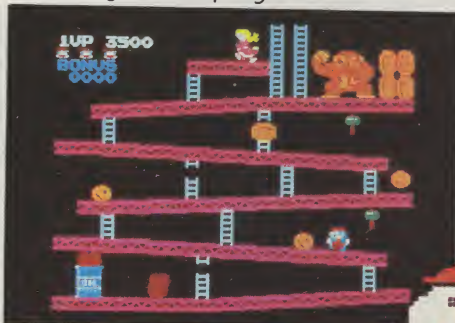
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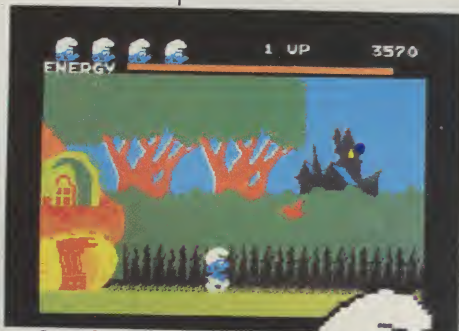


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So go and try one out at your nearest video games dealer.

IN VIDEO GAME COMPUTER SYSTEMS.



The Lightning Oric Assembler. £9.90*

There are other assembler/editors available for the ORIC but none combine the same features and ease of use that we have obtained with this comprehensive utility program for the ORIC 48K. The manual which accompanies the assembler gives a brief insight into machine code and the use of assemblers to enable anyone to write in assembly language after just a little study. Full specifications of the assembler cannot be fitted into the small space available here and so they may be obtained from your local dealer or direct from Mr. Micro.

*Includes comprehensive instructions booklet.

Crazy Golf 48K Spectrum**£6.90**

Crazy golf is a new program for the 48K Spectrum you are required to clear the course avoiding and circumventing the many strange obstacles finally putting your ball in the hole. The par for each hole is displayed and a novel direction indicator combined with a force indicator enable you to send the golf ball in the direction you feel is the best one to clear the course. Crazy golf really is crazy but most of all it is fun and will be found to be very enjoyable by all members of the family.

For use with Joystick and keyboard.

Bengo Vic 20**£6.90**

An exciting program for the unexpanded Vic 20, which combines fast moving strategy and reflex skills. You must control Bengo the super Eskimo against the dreadful snow Yeti - Half blind and half witted the Yeti can smell a good Eskimo lunch - the only protection Bengo has is to hurl huge blocks of ice across the frozen waste at the Yeti.

— Don't get distracted — or you'll be personally responsible for the demise of an Eskimol

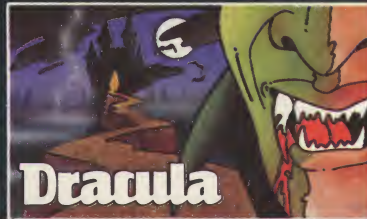
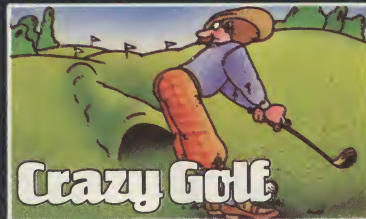
For use with Joystick.

Dracula 48K ORIC**£6.90**

A superb adventure for the 48K ORIC. This adventure is written in the good old style! No silly graphics, no gratuitous drawings, no distractions from pure mental images of horrendous realism. This evocative text adventure of the old genre will have Oric owners shivering with anticipation and perhaps fear.

Dare you load DRACULA into your ORIC 48.7!!

By keyboard.



No shocks — Plenty of surprises!

Mr. Micro means programs you can trust. Programs that are as exciting when you load them as they look at your dealer. Programs that come proven and refined. Programs that bring you the breathtaking excitement of arcade games with the special extra dimension of real mental challenges — all at the right price. Plus accessories and utilities which extend the value of your computer. Ask for Mr. Micro by name at your local dealer. Or order your games direct, post-free, from: Mr. Micro Ltd. 69 Partington Lane, Swinton, Manchester M27 3AL. Cheques should be made payable to Mr. Micro Limited. Ring our 24 hour hot-line for payment by Access or Visa on: 061-728 2282.

**Amigo****£6.90**

Vic 20 8K or 16K expansion.

Hey Amigo you gotta run fast ah. The banditos they are a chasing you and they will a geta you ifa you do nota escapa OK. You musta runa rounda the blocka, when you run round de corners ofa de city the banditos they are frightened to go there and you score de points. Pity you have nota got a gun but a joystick can be fun.

For use with Joystick.

**Digger****£6.90**

Vic 20 8K or 16K expansion

Your remote viewer shows the path of the professors devilish digging apparatus. Using your computer linked remote control you must guide the digger beneath the earth to collect the rare micronite gems. Unfortunately the micronite is protected by the micronits who will plague your machine in order to attempt to stop its progress. You may be able to kill the micronits by skillfully manoeuvring your digger beneath a subterranean stalactite which will then fall killing any micronit in its path. This is a novel implementation of a popular arcade game. For use with Joystick.

**Humphrey****£6.90**

Vic 20 BBC Model B

This new game for the BBC Model B or for the VIC 20 (8K or 16K expansion) and also for C.B.M. 64 involves some tricky decision taking.

Object of game is to make Humphrey land on all the cubes thus changing their colour. Unfortunately Humphrey is being chased by a bouncing ATOMIC BOMBI! You will soon learn that this deceptively simple game has tremendous addictive properties and quite a high degree of tactical skill.

For use with keyboard or Joystick.

**Mysterious Island****£9.90**

Vic 20 16K

Escape from prison in a hot air balloon — try to land it on Mysterious Island, then the fun really begins. • Booby Trapped Fields • Killer Bees • Hostile Natives • Hidden Clues • Force Fields • Capture the Nautilus • Full Graphic Display • Several Games lead to Exciting Climax • Separate Practice Program • Includes Blank Data Tape to store the game to play later.

All successful adventures can claim a unique personalised award by sending Mr. Micro their final position at the end of the game — By Joystick or keyboard.

**RAMDAM****£13.90**

Vic 20

This accessory enables programs which would normally only work with 3K expansion to work with 8K or 16K expansion. RAMDAM saves having to buy a 3K pack if you already own an 8K or 16K. With RAMDAM and a Commodore 16K expansion all known tape games will run on your Vic 20. • Includes Memory Test Program • Free 6.5K game — MICROVADERS for use with Joysticks.

**Punchy****£6.90**

Spectrum 484

Punch has taken Judy for his evil purposes and locked her away. Judy has called upon the forces of goodness to escape, so with the help of our hero Bobby the policeman and you the purchaser of this fine program you must guide brave Bobby across the stage to rescue poor Judy. Leap the gaps. Jump over the dogs. Leap the alligator pit. Dodge the tomatoes. Rock the crib. Collect the sausages and finally rescue Judy. By Kempstone joystick or keyboard.

**Dragon Tamer****£9.90**

Dragon 32

Allows Atari type and other digital joysticks to be used with the Dragon — giving better response and more control. For the first time your Dragon will be able to reflect your true skills. • Achieve higher games scores • Less Frustration.

Plus To ensure maximum value, Dragon Tamer includes two original games for use with digital Joysticks:

**Gold Rush****£6.90**

Vic 20 3.5k

This graphic adventure program was the first in the world to offer real gold for the successful adventurer. An idea which has been much copied but never equalled. • Fun • Educational • Challenging • Clues • Puzzles • Searches • Fast Reaction Game. For use with keyboard.

down. This links up two bases but this never lasts long because it's difficult enough to keep one base out of trouble let alone two.

The game climaxes with a challenging stage where an army of Zalagans swirl across the screen. Sharp shooting is rewarded by big bonuses.

I can recommend Zalga without any hesitation. I rate it as one of the best shoot-em-ups on the market and well worth your attention.

Zalga is for the BBC 32k machine and is available from Essex based Aardvark Software costing £6.90.

● Getting started	8
● Graphics	8
● Value	9
● Playability	9

GALAXIANS HAVE GONE BATTY!

BAT ATTACK

Galaxians have gone batty with squadrons of galactic flying bats! The layout is a five by six formation of galactic bats that swoop down dropping bombs.

Your task is to destroy the fleet without losing all of your initial three lives. About 75% of the graphics screen is donated to the playing window.

Along the side is printed your score, hi-score, remaining ships and current level. Your ship's movement is controlled not by joystick but by the keyboard keys "Z" and "X" for direction, and the shift key to fire missiles.

As the game starts, the bats flutter and small attack wave formations swoop down. The implied diving motion is very simple, not up to the usual intricate patterns incorporated into some of the other Galaxian type games.

The ship's movement is also very bad being far too slow. The rather large and slow missiles launched from the protector ship move in dead straight lines. I tried to "curve" the shot by moving while shooting, but this had no effect.

Once a screen of bats had been completed, a rather raucous space ship sound occurred followed by a series of flying "doughnuts"! This is where C&VG's bug hunting device activated itself to disclose a stupid bug.



Bombs from the previous screen in the process of falling were not cleared, but frozen and displayed in the subsequent screen.

You can't blast the "doughnuts" — you just have to dodge. This is very difficult — and sometimes impossible if a horizontal string of doughnuts is descending!

Another annoying characteristic of this screen is that two ship width sized margins are imposed on the left and right of the playing area — restricting movement.

Apart from that, the "doughnuts" do have very realistic spinning simulations. After this, the next level ensues with faster and more difficult action, alternating between flying bat and spinning "doughnut" screens!

Bat Attack is available from Sheffield based Alligata (Superior Systems), for the Commodore 64, at £7.95.

● Getting started	8
● Graphics	6
● Playability	7
● Value	6

STRANGE, THESE QUARKS

STIX

One unique arcade game that never really took off in the arcades is Stix.

The "Stix" is a bundle of energy, represented by elaborate graphics lines that whizz round the screen. Your job is to harness the stix avoiding destruction. This object is achieved by filling 75% (or more) of the screen, avoiding the hazards that lurk.

You control the construction of the force field synthesiser by use of joystick, creating squares, rectangles and other shapes within the force field perimeter.

Each block or shape created restricts the movement of the stix

giving you more opportunity to corner it — for maximum points. When a field has been constructed, it is automatically shaded. On the larger areas, this process is rather slow, using a "FILL" command.

There are two speeds in which construction can be made. These are accessed with the joystick fire button either pressed or not, and are visibly differentiated by red or blue shadings — on earlier levels. The slow speed doubles your points but increases risk of being wiped out by the Stix.

As mentioned, there are certain hazards to beware of. If the Stix touches a partially constructed field, it will be destroyed due to the molecular transposition! Some nasty looking quarks and anti-quarks patrol the force field perimeter devastating everything in their path! The third hazard is unfortunately a software design fault, which the manufacturers have admitted to and promised to rectify in later production! The problem is that any hesitation whatsoever while constructing a field, results in a rippling wave to penetrate the field, following your construction field directions, and annihilating the synthesiser. However this can be avoided by finishing construction before the wave gets to you!

I found the movement of the synthesiser awkward at the top left hand corner of the field perimeter. Once a screen has been completed, consequent levels ensue with faster, more complex action.

Although the game was exciting to play, I feel this particular version will have to iron out its mentioned defects to become a games players' favourite.

Stix is available from Super-soft for the Commodore-64 computer, at £8.00, plus VAT.

● Getting started	8
● Graphics	7
● Value	7
● Playability	8

MAD MAX TAKES TO THE AIR

BLUE MAX

It's a case of Reach for the Skies in this Battle of Britain game for the Atari.

You play the part of Max Chatsworth, known to friends and enemies alike as the Blue Max. Your mission is to rid the skies of danger, and generally to make the world a safer place to live in.

Once the game has loaded, pressing the start key will clear the screen to show your plane and the runway. Your aircraft is quite small, made up from just one character.

The plane will taxi automatically and you must take off before you reach the end of the runway. You cannot leave the ground unless your speed is over 100 mph.

Once airborne, you must destroy the enemy cities below. You have 30 bombs and an unlimited supply of bullets. Bullets are fired by pressing the button on the joystick, and if you pull back on the trigger at the same time then you will drop a bomb.

If you pass over a friendly runway then you can land on it. In fact you will have to land to have your tanks refuelled and your bomb store replenished.

Landing is not too difficult, as long as you can remember to come down slowly.

There is a number of options which you can select to make the game easier to control. For example you can reverse the controls on the joystick so that pulling up will make you either climb or dive. You can also introduce gravity so that releasing the joystick will cause you to dive instead of just hovering.

If you like the idea of a game based on the Battle of Britain

continued on page 39

BLASTERMIND

SPECTRUM 48k £5.50

At first glance this might seem to be just another version of a very popular game. How wrong can you be!!! True, the start is simple enough. The Spectrum picks a code of numbers or colours with a selection of levels of difficulty — and invites you to do the same. You then take it in turns to guess each others code from the clue supplied after each guess. An extremely well written, fast and very clearly displayed game, with almost inevitable defeat.

This was exactly as intended but unfortunately *something went wrong*. During the programming strange complimentary messages began to appear on the screen. At first they were so few they were not taken too seriously, but soon they could no longer be ignored. Somehow the Spectrum had been given a personality — a rather devious, supercilious, dislikeable, hateful, horrible mind.

✱ Side B contains a version of the game compatible with the excellent Currah µSpeech unit — even worse!! ✱

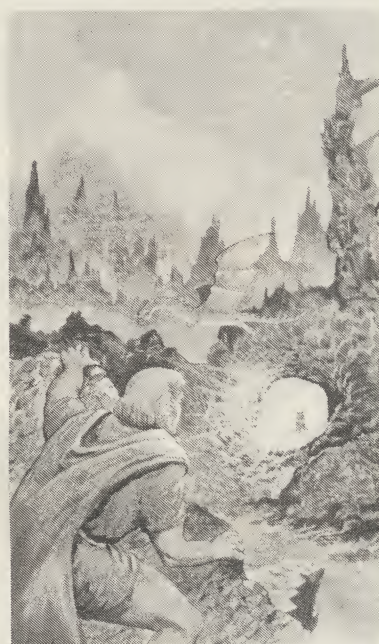


THE QUEST OF MERRAVID

VIC 20 (16k) £7.95
or Commodore 64 £7.95

A really challenging and enjoyable adventure, written by a confirmed adventure addict who grew tired of the ease with which he solved other adventures himself. Will accept and act on sentences containing up to nine words.

The adventurer becomes Merravid, charged with the task of finding, taking and then returning the magic Firestone of the Dwarves. However, overcoming the many novel and original hazards is no easy matter. Careful and imaginative thought is required if progress is to be made and the Firestone tracked down to the lair of the Dragon of Thargon. Even then the Dragon has to be defeated and the stone retrieved. A compulsive, extremely enjoyable and very user friendly adventure.



HARRIER ATTACK

any ORIC - 1 £6.95
any SPECTRUM £5.50

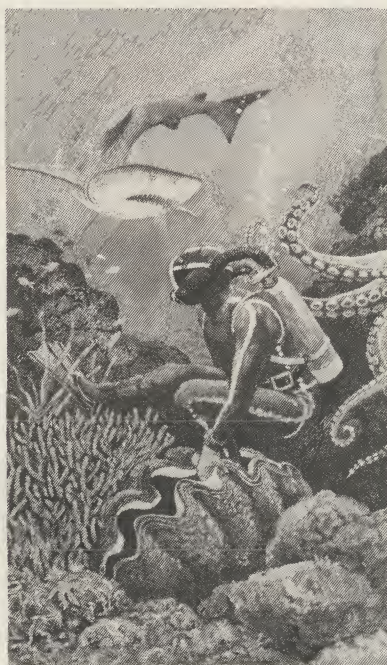
Pure machine code, super-fast, action-packed, highly addictive arcade-style game requiring great skill. The harrier takes-off from an aircraft-carrier and flies over seaborne defenses to attack enemy installations on a nearby island. The harrier may fly faster, slower, higher or lower, and has bombs and cannon fire with which to protect itself and make its own attack. If it flies too high it is detected by enemy jet-fighters (which it may counter-attack) — so it needs to hug the mountainous terrain which also varies with every new game. But the island is heavily defended by anti-aircraft rockets and tanks, which again the harrier may counter-attack or try to fly through. A tally is kept of fuel, speed, altitude, ammunition, plus player score and high score. Finally the harrier must make its bomb-run over the enemy base before returning past more hostile shipping to its own carrier.



SCUBA DIVE

any ORIC - 1 £6.95
SPECTRUM 48k £5.50

Pure machine code with super cartoon graphics. You are in control of a diver who must swim down through jellyfish, sharks, barracuda and a host of other under-sea nasties to locate the entrance of a submarine cave. He must then follow its twisting and branching passages which change with every new game, to locate the magical giant oysters with their fabulous treasure of enormous pearls. Many of the passages lead to dead-ends, while some are filled with horrible underwater monsters. Each dive has to be timed carefully so that there is enough oxygen left for the return journey, which is further frustrated by the diver's boat shifting anchor and threatening to decapitate him with its propellor. This game which features three divers, player score, high score, hall of fame and sound effects, presents perhaps the ultimate epic arcade adventure.



— ALSO —
AVAILABLE

JUNGLE TROUBLES — frustrating, addictive, funny, silly. Come back Tarzan — all is forgiven! SPECTRUM £5.50

GALAXY 5 — five games on one tape for any ORIC - 1 £6.95

STARFIGHTER — Strategic arcade action. Pure machine code for any ORIC-1 £6.95

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Telephone: (0323) 768456 Telex: 87465 EXIM Brighton

continued from page 37

then you'll enjoy playing Blue Max. If the whole idea isn't your cup of tea then you'll easily find another program to spend £29.95 on. Blue Max runs in 32k on an Atari 400 or 800.

● Getting started	8
● Graphics	8
● Value	8
● Playability	8

CAUGHT OUT ON THE GRID!

GRIDRUNNER

One of the first arcade games to be available for the Commodore 64 has now been transferred to the Spectrum.

Designed by Jeff Minter, this Spectrum version is written by Salamander and marketed by Quicksilva!

Confused? You won't be ... Read on.

Gridrunner is similar to Atari's Centipede, but set on a grid of squares which covers the screen. There is also a computer-controlled laser which shoots at random from the side of the playing area.

The idea is to destroy the animal, but it splits into pieces as you shoot, until the screen is full of small aliens sweeping down towards you.

The game runs on a 16 or 48K machine. When the tape has loaded, the screen shows the title of the game and the current high score. There are no instructions printed on the cassette inlay, so I had to press every key to find out what to do next. The O key is used to start, while Q, A, I and P are used for movement. This is a lot easier than the 4 cursor keys as used on many other games.

The graphics are excellent, and are as good as if not better than those on the 64 version.

The Centipede splits into a number of fragments, each of which seems to rotate on its own. Movement is very fast, and the game is quite difficult to play. All in all Gridrunner from Quicksilva is quite an addictive game to play.

The game runs on any Spectrum, and is available from Quicksilva. It costs £6.95.

● Getting started	5
● Graphics	8
● Value	8
● Playability	7



GORILLA KEEPS ON CLIMBING!

KONG

Donkey Kong games are as vital to the games players library as Space Invaders and Pacman. Putting it bluntly, your collection 'ain't worth a dime unless you've got a tape with a crazy gorilla and cute Italian carpenter battling it out for the hand of a lady.

When buying classic games it's important to get a good version.

Donkey Kong-type games are no exception to this rule and one new micro which will undoubtedly have several versions available is the Commodore 64.

One of the first of these games to come in for the C&VG gorilla-bashing test session is Anirog's Kong. The game scores highly on graphics making use of the 64's vivid colours — most arcade-like.

The high standards in graphics were unfortunately not matched in game play. It was very difficult to make Mario jump over the barrels and at various stages in the game the character steadfastly refuses to take running jumps.

The game makes good use of the 64's ability to create very smooth scrolling graphics — the movement of Mario and the ape being very smooth indeed.

It's a pity this smoothness of movement was not matched with more careful animation. This is at its worst in the running motion of Mario who hobbles along as if with a limp.

A reasonable version of the arcade hit although I couldn't help feeling it could have been a lot better. In the shops now at £7.95.

● Getting started	8
● Graphics	5
● Value	5
● Playability	5

THE WEIRD GAMES WE PLAY!

POOYAN

I sometimes wonder how much computer programmers and designers drink. Judging by the weird themes and ideas in most computer games these days it must be quite a lot.

Pooyan is definitely one of a new wave of "imaginative" games, well I'd certainly call parachuting wolves different.

The intrepid wolves leap from a tree top opposite Pooyan, in an attempt to glide down to the ground.

You control Pooyan who sits in a basket dangling by a rope from a cliff top. Your job is to burst the helium balloons the wolves are using, with your trusty bow and arrow, to protect Pooyan's family of piglets.

The wolves aren't defenceless although they will occasionally launch a volley of acorns at Pooyan's basket.

If you let any of the wolves reach the ground they'll climb the ladder next to the rope and try to bit it in half.

Another line of attack you can employ is the magic arrow. This appears at the top of the cliff and disappears rapidly too if you don't get to it quickly. This arrow is much more powerful than usual and can kill several at a time. However it becomes much more difficult in later sheets to collect it as there can be anything up to ten wolves trying to bite the rope.

The first level is completed once you have killed 32 wolves. The next level takes in the Wolves' Lair. The beasts have changed direction and are now being lifted to the top of the cliff. If more than seven reach the top they'll push a rock over the edge which makes a very nasty mess of Pooyan.

I can find absolutely nothing to criticise in Pooyan. The graphics have to rate as one of the best available for the Atari. The game is very playable and addictive. All Atari owners should make an effort to look at Datasoft's Pooyan.

● Getting started	8
● Graphics	9
● Value	8
● Playability	9

MAURICE AND THE BIG BOYS!

MAURICE MINOR

Maurice, the Morris Minor took a wrong turning one day while out for a drive. Finding himself in the middle of a Grand Prix instead of a quiet country road, he enters into the spirit of things and takes on the racing cars at their own game.

Maurice Minor incorporates six difficulty levels, a display grid showing the level of damage and Hall of Fame.

In each level the speed of the game increases — you could take it easy and start as a Sunday Driver or jump to the other end of the scale as the King Pin where, I assure you, Maurice really shifts!

I found it impossible to get anywhere in the faster levels due to the failings of the Dragon joystick. Maurice is very sluggish in answering the controls and it's impossible to keep him travelling in a straight line.

One real gripe — while we were playing Maurice Minor the program crashed three times for no apparent reason! Maurice Minor is available from Leeds based J Morrison Micros for the Dragon 32 at £6.95.

● Getting started	8
● Graphics	5
● Value	4
● Playability	3

VIDEO

COMPUTER OR VIDEO GAMES?

Computer keyboard add-ons are here at last and *C&VG* has got its hands on two of them to test them out before they go into the shops. Will they offer serious competition to the micros?

The VCS keyboard is manufactured by Spectravideo — the makers of the Spectravision range of cartridges. 2k of computer memory can be used to write your own programs — which can then be stored on cassette tape by connecting the VCS to a tape recorder with leads supplied.

The Compumate also has 16k of computer memory built in to perform a number of other functions. These include a music capability which can simulate the sound of piano and organ, has four built in tunes, and enables you to write and edit your own compositions, then play them back or store them on cassette tape.

Also built in is the Magic Easel graphics drawing system which

enables you to draw in up to ten colours and run six different screens at a time to create an animation effect.

Main reason for buying a Compumate is to learn to compute and start writing your own programs. The Compumate is ideally suited to do this as it uses the most popular home computer language — Basic.

An instruction manual provides a step by step guide to the keyboard and also takes you through a few simple programs.

The keyboard itself is touch sensitive with cushioned pads that click when depressed to acknowledge the keystroke.

The Compumate sits on top of the VCS and is connected to it through a cartridge which slots from the keyboard into the cartridge port.

All necessary leads are supplied with the Compumate which is available now from Silica Shop at £49.95.

INTELLIVISION DO IT TOO

The Intellivision keyboard is finally here — no less than two years after it was promised to Intel owners. We discover if it was worth the wait.

Despite the delay and if you still want to get into computing and haven't already bought another home computer then the Computer adaptor and keyboard will enable you to do just that.

For your money you get two boxes — a large square box which plugs into the cartridge port and the keyboard itself.

Styled in the same black plastic of the console though with sharper, more angular corners.

The keyboard has full moving keys laid out in standard typewriter fashion.

As with its Atari counterpart — the Computer Adaptor comes complete with Manual. The keyboard also has a built in colour-coded Basic tutor to augment the manual.

Like the Compumate the Intellivision keyboard has 2k of computer memory for writing your own programs. These can be saved on cassette tape by con-

necting machine to a tape recorder. The recorder also enables you to reload programs into the machine.

The add-on uses a hybrid form of Basic which enables you to access the sophisticated graphics controls of the main console.

The main disadvantage of this is that it takes the beginner away from normal Basic — as employed in other home computers.

For real computer buffs the Mattel Aquarius printer is also compatible with the keyboard if you want to have paper copies of your programs.

The Intellivision keyboard and adaptor are in the shops now at £89.95.

THE SUPER STICKS . . .

The super new Cynex remote control joysticks featured in our July issue have now been slashed in price to a more competitive £34.95.

Originally priced at a hefty £70

the sticks were beyond the reach of most gamers.

The new price at just £5 more than an average cartridge should put the sticks within most people's reach.

Remote control game play has been made possible by the development of a unique radio chip — which enables you to move objects around the screen without wires cluttering up your living room.

In our August issue we asked you to sort out our jumbled joysticks for your chance to win a set of Cynex sticks. And at last we can announce who won!

Lucky winners of our prizes — generously provided by Cynex's UK representatives — Omega Enterprises — are:

Simon Cawley of Keynsham, Peter Evans of Wolverhampton, Philip Hicks of Broxbourne, Herts., Malachy Devlin of Cookstown, Co. Tyrone, Scott Corbett of Aberdeen and Darren Jones of Port Talbot, Wales.

Our eagle eyed winners were the first to spot that of the crossed wires drawn for us by artist Ross Collins. Wire C was the one the bemused player should have chosen to get at his joystick.

Our congratulations to all the winners.

THREE FOR THE COLECO

Stand back . . . for the launch of hi-quality, modestly priced video games!

The first will drive you up the wall — or drainpipe — with excitement! You play the role of Frantic Fready the fire fighting bug! Your inevitable task is to extinguish a series of fires in a multi-story building by firing snowballs through the blazing windows!

One dangerous hazard is the falling fireballs which burn you to death on contact. Each flame takes about five snowballs to put out!

On consecutive levels the action really hots up! You may now climb the drainpipes to higher levels and shoot left or right. If you see two flashing doors you may enter one and reappear out the second!

Several stranded cats on each level appear at the windows and try to jump to safety!

If you don't catch these you will lose one of your three lives — shame you're not a cat! Extinguished flames start to regenerate themselves and wander over the screen in order to smother you to death!

Does anyone like Galaxian-type games with a difference? You do . . . well the next two will interest you.

The first — Super Cross Force — shows a hi-res colour graphics display of deep undiscovered space — where no reader has been before. Several planets fill the screen.

You control an infinitely powerful galactic cathode and diode blaster, which when operated causes a deadly high voltage spark to jump across. The terminals are placed top and bottom of the screen. The aliens appear in squadrons swirling and circling in formation attempting to destroy your blaster.

You must dodge the missiles and electrocute invaders as they cross your range. Unfortunately the spark drains your fuel supply. This may be filled by shooting descending parachutists!

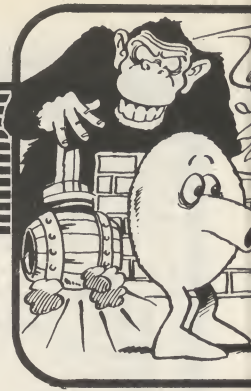
The game incorporates three unusual options, parallel, diagonal and dual. In parallel mode the terminals move simultaneously. Diagonal mode causes terminals to diverge thus producing a diagonal spark. Dual mode is for two players, each controlling one of the terminals!

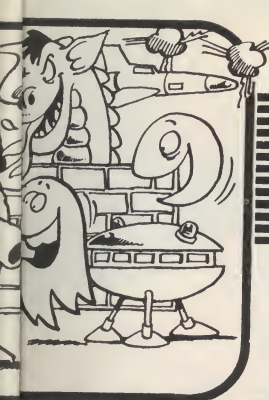
As usual each consecutive level increases in difficulty as you progress through the game.

The other Galaxian-type game — Spectron — shows a futuristic picture of an Earth defence base. The aliens appear in six by three formation and swoop down dropping bombs on your missile launch area.

Your only protection is a narrow force field which deteriorates under alien attack! Bonus points are scored by hitting the space ship that flies across the top of the screen!

All three games are for one or two players and are available from Silica Shop for the Coleco-Vision system at £19.95 each.





GAME

SAVE THE STRANDED MOON MINERS

Moonsweeper, a shoot-em up arcade style game has arrived at last! How long can you survive the attack of marauding aliens while you rescue six stranded miners?

Your aim is to fly a space craft to a distant planet in the outer reaches of the galaxy and rescue six stranded miners who are desperate to start digging on another planet.

Whizzing through space you'll need all your wits about you as you come under attack from

alien craft and UFO's who want nothing more than to see you go down in flames. After docking on the miner's planet the pace hots up as you are blasted from all angles.

Using your firepower, blast your way off the planet and enter the time tunnel which will lead you and the miners to safety and the completion of your mission. The game reverts to the beginning at this point but rescuing the miners gets progressively harder on each new level.

You can accelerate and decelerate your spacecraft by pushing forward and pulling back on the joystick to dodge the aliens.

Moonsweeper should have arrived on the shelves well over a month ago but due to production delays in converting the game to the UK PAL system, the game will now be here by December.

Moonsweeper, by Imagic, for the Atari VCS, will be available from all leading retail outlets at £29.95.

FAREWELL TO SPIKE'S PEAK

Spike's Peak and Ghost Manor, one of the new breed of double-ender cartridges by Xonox was to have been available in the UK by Christmas.

However you won't see the double-enders by Xonox on the shelves this Christmas as K-Tel,

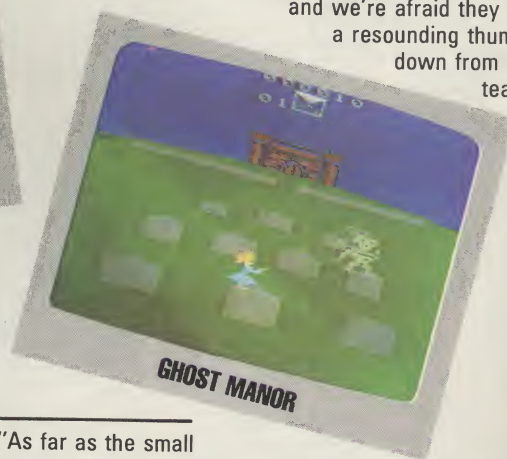
the record people will no longer be acting as distributors for the firm in the UK although they are still handling the distribution in the States and Europe.

K-Tel say: "We have decided not to go ahead in the UK." Apparently so many setbacks were experienced in the States with production problems and power conversions that it is unlikely that

the cartridges would have arrived in time for Christmas.

In Spikes Peak you pull on your mountain boots become a mountain climber, braving man-eating polar bears, vicious eagles and the ever present danger of landslides and avalanches. Or if the fancy takes you can enter Ghost Manor and try to rescue your friend from the wily clutches of Dracula.

Our reviewers had a sneak preview of these two games — and we're afraid they got a resounding thumbs down from the team!



SOFTWARE PIRACY

In the continuing fight against piracy, Atari has successfully brought another case to the law courts.

The three defendants charged with piracy on October 25th were the latest in a number of people taken to court by Atari over the last few months.

The charges included injunctions to stop the infringement of Atari software and also to stop the defendants passing off any software as the original Atari item. They will also have to deliver up all infringing software and items such as documents, bills and invoices.

This case of software piracy was brought to Atari's notice by adverts placed in magazines and journals.

The adverts offered Atari cartridges and disc based software at a fraction of the retail price. In some cases the games offered had not been released in the UK but were available only in the States.

The result of the case fell in Atari's favour with affidavits being sworn by the defendants undertaking not to copy Atari software. Atari have also been awarded court costs which are likely to be substantial and the defendants have accepted dam-

ages which are nominal — £300 to be paid to Atari.

Not wishing to discourage potential programmers, Atari have decided on a softly-softly approach to the problem of piracy. Once a cartridge or disc's protection has been broken, the machine code subroutines of the program can be viewed. There are many who learn in this way by looking at a game's routines and the techniques used to see how the program works.

However, the end result is sometimes misuse with a few people carrying the procedure one step further and copying the games to sell for commercial gain.

Atari's viewpoint is that the copying of a copyright program for whatever reason is illegal and

they stated, "As far as the small pirate is concerned, we don't want to use an extremely large amount of muscle to crack a small walnut."

Atari would much prefer to see the time, effort and money used to catch the pirates diverted to more important aspects such as as lowering the price of software.

● What do you think about software piracy? Why not drop us a line and express your views. Write to Mailbag, *Computer and Video Games*, Durrant House, 8 Herbal Hill, London EC1R 5EJ.

COMING SOON!

Who is Professor Video? What is his mission in life? How can he help you get bigger scores when you play your favourite game on your home video game system? Watch these pages for the arrival of the mysterious Professor Video!



SOFTWARE PROJECTS

Bear Brand Complex,
Allerton Rd., Woolton, Liverpool,
Merseyside L25 7SF

PUSH OFF

16/48K SPECTRUM

It's a tough life being a ladybird, being chased by the creepy crawlies in the garden. Luckily you have ammunition to push around and crush your adversaries. Can you survive the first eight screens? Then the game becomes difficult! Spectrum software at its best. 100% machine code fast action.
by Andrew Giles.

£5.95

McKENSIE

48K SPECTRUM

An adventure for the 48K Spectrum. Answering distress calls from space stations can be very hazardous as you will find out. Lithium crystals, bandits, limited air supply all add to the ingredients of this exciting adventure.
By E. E. K.

£5.95

Crazy Balloon



CRAZY BALLOON

COMMODORE 64

Manoeuvre your hot air balloon around the skies avoiding all the hazards. Pick up bonus points along the way and experience the thrill of flying around in a balloon. 100% high resolution machine code using the GBM 64 to its best. Sorry only 26 levels.

by Chris Lancaster

£7.95

SPACE JOUST

VIC 20 UNEXPANDED

Arcade action for the unexpanded Vic 20. Manoeuvre your space craft around the screen avoiding waves of enemy space ships, meanwhile trying to destroy them by landing on them from above, also can you destroy the pods before they return to destroy you.

(Joystick only).
By Ian York

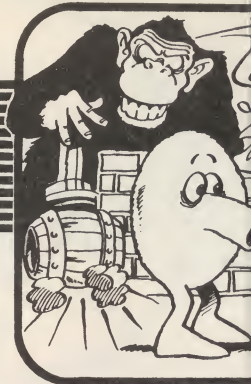
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WIZARD FUN IN NARZOD!

Vectrex owners are in for hours of thumb numbing action as they seek to penetrate the walls of the Fortress of Narzod.

This game is guaranteed addictive and, if you've got things to do, not to be recommended.

It's a big enough strain to stop playing for long enough to write this review — to say nothing of answering the telephone, going to work, or eating three square meals a day.

The cause of all this trouble is a particularly nasty brood of demons in the employ of the evil wizard — Narzod.

Toughest of these henchmen are the Warbirds, Ghouls, and Mystic Hurlers.

As the last of the good wizards you must fly your hovercraft into the fortress and destroy the wizard.

The roadway to the castle is divided into four sections each with its own band of creatures.

Your hovercraft is capable of rapid fire and you can also bounce the bullets off the walls — but take care as sometimes the bullets can bounce back and hit you.

One you have destroyed all the creatures in one sector, a notice will flash up on the screen — "You May Pass". To do this you take your hovercraft up to the top of the screen with the joystick and through the tiny door to the next level.

Each level is tougher than the previous one and you will have to blast your way through four sections to get to the The Fortress.

Once inside the fortress you will be bombarded with Spikers from the Mystic Hurler. This is the toughest test of all and you will have to register six direct hits on the Mystic Hurler to kill it.

The irresistible attraction of Narzod is due to your curiosity to get into the fortress and get a glimpse of the wizard. In the

process the game also gives you a super fast shoot 'em up!

THE VERDICT.

The most frenetic shoot 'em up yet on the ever improving Vectrex.

- Action
- Graphics
- Addiction
- Theme



DUNGEON CHALLENGE

Dungeons and Dragons takes an evil twist in the Treasure of Tarmin. Mattel's D&D games have proved a real hit with Intellivision owners and this third cartridge will be no exception.

The action takes place inside the tunnels and corridors of the Island of Tarmin.

Deep inside the fortress lays the priceless treasure — guarded for decades by the forces of evil.

To recover the treasure you will have to avoid being killed by giant ants, scorpions, snakes, dragons, ghouls and wraiths that inhabit the fortress.

A three dimensional simulation of movement is created as you move down the corridors with doors and walls looming in front of you. Similar to 3D maze games.

Finding your way around the corridors is one of the toughest parts of the game and you would do well to take a tip out of the Adventure gamers book and keep a pen and paper by your side to note down certain key locations.

As you travel you will find certain artifacts in the corridors which can help you against your enemies.

Only six of these can be held in your pack at one time so you must keep a constant check on the suitability of the objects for each stage of the game.

In order to attack you need to be holding a magical item or weapon in your right hand. Sometimes these will vanish in battle so it is wise to keep a few weapons in your pack.

Each encounter with an enemy will cost you a certain number of points so you have to check your score before and after the fight.

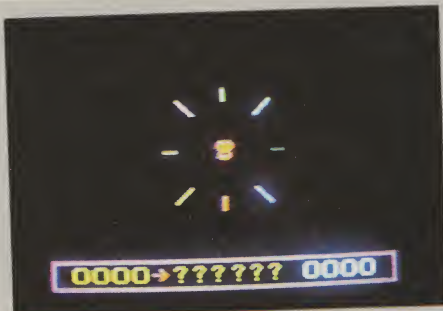
There are some useful items scattered throughout the corridors, as well as all the ghouls, like the ladder — which you can use to climb through into the next



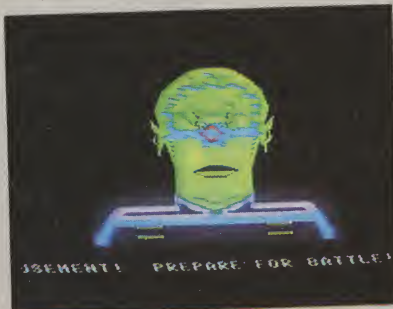
GALAXIANS



TREASURES OF TARMIN

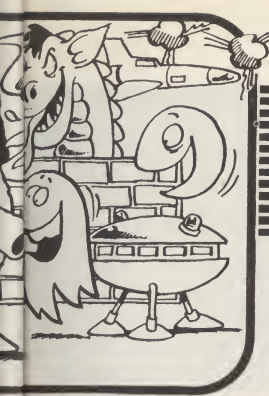


TERRAHAWKS



SPACE FURY





WELL PLAYED





level or the Eye Mural which enables you to see what lies ahead.

There is a lot to this game — both in terms of video games fun and intellectual challenge.

For those of you who already own D&D games it is a must but for those of you who don't it is also an excellent game in its own right.

THE VERDICT.

No better Christmas present for an Intellivision owner.

- Action 
- Graphics 
- Addiction 
- Theme 

WELL PLAYED GALAXIANS!

Atari it seems are having trouble finding arcade games to convert for their VCS. Galaxians, a new release, although a great game is well past its heyday.

Apart from my qualms about the age of the game I think Atari have outdone themselves on Galaxians by producing a top rate game, and I have to admit to being pleased with the vast improvement in the quality of Atari's software over the last 12 months.

The game is a straight copy of the original. It has all the different meanies of the real machine and the kamikaze diving actions too. The swooping aliens have a real turn of speed which will test even the most experienced of Galaxian experts.





The display is neat and very colourful. The graphics are close to the arcade machine and fast with none of the awful flickering which spoilt Atari's Defender.

One small criticism of the cartridge. In the early stages the game is very easy — but after a while this position is reversed and swarms of aliens are thundering down at your laser base.

Galaxians is a classy reproduction of the arcade game and one that deserves to be in all shoot-em-up fans games collections.

THE VERDICT.

Well worth asking Santa to leave a copy of Galaxians in your stocking this Christmas.

- Action 
- Graphics 
- Addiction 
- Theme 

PLAY WITH TERRAHAWKS

Terrahawks is the name of the game — and the name of a new TV series featuring the puppets of Gerry Anderson, the man who brought you Thunderbirds.

Philips have signed a deal with Mr Anderson to market games based on the series — and Terrahawks is the first of these cartridges for their G7000 system.

At the launch of the new game Philips owned up that it was being written before someone came up with the idea of linking it to the TV show.

But the game has all the ingredients of the show — nasty evil aliens and a brave defence force determined to beat off their attacks.

Terrahawks is the first of a new wave of games for the G7000 which are a considerable improvement on what has come before. It's a classic space shoot out — in Galaxians or Space Zombies style.

The game starts with Zelda — chief nasty in the TV show — appearing on the screen and launching a wave of ships to attack the Hawknest, the Terrahawks' base. You control one of the Terrahawk ships and blast away at the alien ships which swoop and swarm above you.

As the game progresses each wave of alien ships is armed with more devastating and dangerous weapons to hurl down at the defenders. It begins with clusters of rockets which are fairly easy to blast or avoid. Then come the anti-matter mines which drift down slowly — but have the nasty habit of homing in on your Terrahawk ship.

Then little green meanies appear to plague you. These are the Annihilators which race across the bottom of the screen at you if they manage to reach the earth's surface that is. Your best bet is to blast them before they land!

Meanwhile the anti-matter mines and rocket clusters are still falling too!

Zelda's fourth squadron is armed with the deadly Nucleonic Space Mines which zero in on their target.

By this time things are getting a bit hectic — and if you live through four screens Zelda begins her invasion again — but the aliens begin to get fiercer with each wave.

It's not the most original of games but quite addictive once you get into the swing of things. One small criticism I'd make is that it's difficult to tell when one game ends and another starts.





You only get one life so when your base is blasted by an alien that's it. But the only indication that the game is over comes when the score register flips back to zero at the bottom of the screen.

There is a high score register too — which makes playing against a friend a competitive affair.

Overall Terrahawks is a good addition to the range of games for the G7000.

THE VERDICT.

A basic space shoot out — but none the worse for that.

- Action 
- Graphics 
- Addiction 
- Theme 

FURY OUT IN SPACE

Space Fury is a very old idea in a new and not altogether successful package.

Shoot-em-up fans will instantly recognise the similarity between Coleco's Space Fury and the legendary Asteroids game, even though there isn't an asteroid in sight.

You control the ship by moving left, right and forward as in Asteroids but the moving objects are certainly different, some would say uninteresting.

The game starts with a picture of an alien daring you to do battle with him. Coleco have made a very unconvincing attempt to synchronize the alien's lips with the scrolling message at the bottom of the screen.

This ridiculous performance is

repeated at the beginning of each and every game. I have to admit the display is novel the first time round but from then on its attraction fades rapidly.

Compared with other games for the ColecoVision Space Fury's graphics are abysmal. The first screen start with 15 moving squares which you simply have to shoot. As the level progresses the squares join together to form large diamonds, which sounds sinister but actually makes the game easier to play.

The next stage of the game involves docking your ship with one of three mother ships on the screen. You have a limited time to manoeuvre your craft in position, if you fail to dock in the time limit you will lose any bonus you might have gained from the first level.

The other two sheets on the first level are similar to the first but the enemy are a different shape.

The graphics are so bad it's hard to tell what they're supposed to be, but one set of aliens does bear a resemblance to purple coloured doughnuts.

After the first level has been completed further sheets contain mixtures of aliens.





When a game finishes the alien appears again and cast his opinion upon your performance. His comments range from an "amusing" to a formidable opponent. To give you some idea how difficult the game is I became a "formidable opponent" within quarter of an hour.

Space Fury contains the obligatory catchy tune, but unusually bad graphics for the ColecoVision. It also has the one fault that marring almost all the Coleco games, it's far too easy and fails to present a new challenge to the games player.

Space Fury isn't up to the usual standard of games available for ColecoVision, and when compared to the original Asteroids game it really does fall flat on its face.

THE VERDICT.

Give me an old fashioned Asteroids game any day of the week.

- Action 
- Graphics 
- Addiction 
- Theme 

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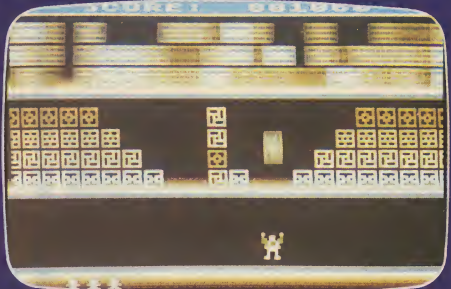
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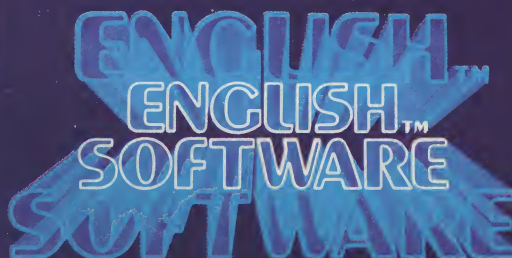
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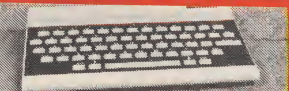
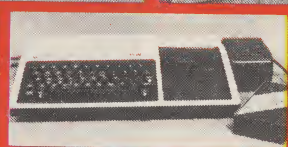
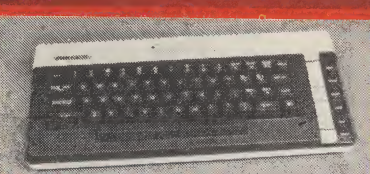
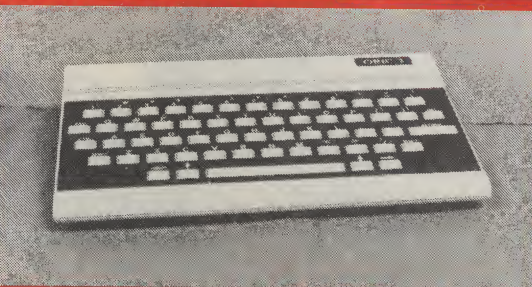
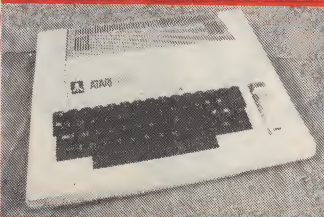
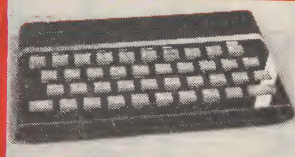
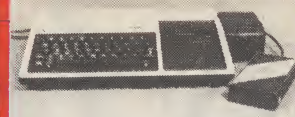
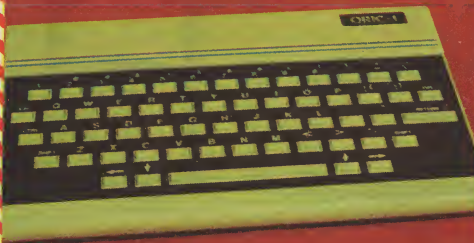
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THE GAMES PLAYERS' GUIDE TO THE MICRO

Our motto at *Computer & Video Games* has always been to advise our readers and save them money by pointing them in the direction of quality and value for money. This

Christmas, we present 11 full machine reviews for you to scrutinise, offering advice and more importantly, helping to put your inquisitive minds at rest and make the right decision.

Our reviews, compiled by Richard Frankel, cover the popular machines as well as some of the latest contenders to the home market, which we feel will be successful in the near future. We make an assessment on the famous Atari 400 and 800 as well as revealing Atari's new baby the 600XL. In addition we look at the VIC-20 and CBM-64, the Acorn Electron and BBC, Japan's latest contribution, the Sord M5, and the increasingly popular Oric-1.



After blasting try exploding



What do home computers mean to you?

Do they conjure up images of '1984' and 'Brave New World'?

Or do you think of them as advanced video games?

The subject is shrouded in myth. One or two of which we hope to clear up (with a little help from the Dragon 32).

Video games are a great introduction to the world of the home computer.

But there's more to them than simply saving the universe.

"THEY'RE JUST A TOY"

True they can be used as a toy. To prove it we've produced a wide range of high

quality software aimed at the games player.

But to use a Dragon simply to play games on is rather like buying a car just to listen to the radio.

So what else is there? Well, there's programming.

We've even produced some software that'll help you master the basics.

Then there's Typing Tutor, a program that's particularly useful on the Dragon 32 thanks to its professional quality keyboard.

In fact our software range has something for just about everyone, from our Young Learning series right through to Computavoice, a program that can actually make your Dragon speak.

Take a look at the sample list provided and you'll see just what we mean:

Dragon Selection
Personal Finance
Dreambug
Chess • Dream

YOUNG LEARNING SERIES.

Number Puzzler
Number Gulper • School Maze
Circus Adventure • Hide & Seek

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Berserk • Doodle Bug
Cosmic Invaders
Shark Treasure • Flag
Whirlybird Run

ADVENTURE GAMES.

Mansion of Doom
Shuttlezap • Eno/Stalag
Quest • Dragon Mountain

Just a selection from our range.

"THERE'S NO POINT
BUYING ONE NOW."

Computers, like anything else, can seem a little daunting if you don't start right at the beginning.

But, basically, they are logical and easy to understand.

Especially if you start with a home computer that is logical and easy to understand.

Like the Dragon 32.

some aliens, a few myths.

Maybe, though, you want to wait a while.

After all computers are advancing all the time. Aren't they?

True. But there's no point getting very advanced equipment if you don't know how to use it properly.

Besides the Dragon 32 is versatile enough and has a large enough memory to be able to cope with all your family's computing needs for years to come.

That's certainly no fortune for a machine with specifications like these.

6809E MICROPROCESSOR.

The most powerful eight bit processor available

32K RAM (as standard). At least twice the memory of most similarly priced machines.

EXTENDED MICROSOFT COLOR BASIC (as standard).

Featuring: ADVANCED GRAPHICS (set, line, circle, paint, print, draw, rotate and print using). ADVANCED SOUND 5 octaves, 255 tones.

AUTOMATIC CASSETTE RECORDER CONTROL. FULL EDITING with INSERT and DELETE.

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USE WITH ANY U.H.F. TV and/or separate P.A.L. monitor.

PROFESSIONAL QUALITY KEYBOARD. Typewriter feel. Guaranteed for 20 million depressions.

JOYSTICK CONTROL PORTS.

**"YOU NEED A SCIENCE
TO UNDERSTAND THE**

**DEGREE
JARGON."**

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So you won't have to keep asking the kids how to use it.

And as computers begin to play a bigger role in our lives, so a knowledge of them becomes more important.

Many schools have already recognised this, and computer studies is commonly taught.

Mind you it'll never have the 'dull' tag attached to it like other subjects, because computers (especially home computers) are great fun.

How else can you save the universe in your own front room?

DRAGON 32
the first family computer.

The Dragon 32 is a proper computer. As standard it offers a massive memory, together with many functions you'd only expect in a much larger (and more expensive) machine.

Yet it will only set you back £175*.

**"YOU HAVE
FORTUNE**

**TO SPEND A
TO GET A 'PROPER' ONE."**



THE BBC MICRO

HARDWARE
PROCESSOR BASED: 6502
RAM: 32K (non expandable)
ROM: 32K
POWER SUPPLY: internal
R.F. OUT: phono socket
GAME PORTS
A-D CONVERTOR: 25 pin connector
VIDEO OUT: 5 pin din/phono socket
OTHER CONNECTORS: Tube, 1 MHz Bus (for connection to teletext adaptor), Printer, Disc Drive, I/O user port, Econet socket, 5 pin cassette input
KEYBOARD: 'Qwerty-style', 74 full travel keys, including 10 function keys
SOUND OUTPUT: on board speaker

SOFTWARE
SOUND: four individual channels, 15 amplitude levels, 255 pitch variations, 255 duration lengths. 14 part envelope generator.
BASIC: Acorn Structured Basic
USER DEFINED
GRAPHICS: maximum of 30, 8 x 8 block grids
COLOURS: 8 NORMAL: black, red, green, yellow, blue, magenta, cyan, white
8 FLASHING: black-white, red-cyan, green-magenta, yellow-blue, blue-yellow, magenta-green, cyan-red, white-black.
GRAPHICAL
SYMBOLS: none

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£349 (+VAT)
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£230 (+VAT)
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14" COLOUR MONITOR:
£250 (+VAT)
ACORN DATA CASSETTE RECORDER: £26 (+VAT)
GAMES PADDLES (PER PAIR): £11.5 (+VAT)
SPARK JET PRINTER (MAX 132 COL.): £365
VOICE SYNTHESISER: £55 (inc. VAT & fitting)
SECOND PROCESSOR 6502:
£170

* Prices correct at time of going to press.



The BBC computer was the machine everyone waited for. And they weren't disappointed! The BBC offers powerful graphics, sound and basic as well as having a good quality keyboard and well documented manual. The machine came in two versions — Model A and Model B. The Model A came in at £300 and the B at £400. The Model A is no longer available so this review deals with the 'B'. The machine now comes with 32k RAM and 32k ROM as standard.

BASIC/GRAPHICS/SOUND

The BBC uses "structured" Basic which is becoming more common on new machines and is considered a more logical approach to programming. For those not familiar with structured Basic. Structured programming eliminates statements like "Goto" and "Gosub". Instead subroutines are named when they are created and can then be called by name as opposed to line number.

Other Structures include IF . . . THEN . . . ELSE, ON . . . GOTO(SUB) While . . . Do loop. LISTO will give you a listing where all structured loops are indented for easy identification and neat format. Procedures and functions may be defined using local and neat format. Procedures and functions may be defined local variables, and any reference to a local variable outside its procedure or function results in a "NO SUCH VARIABLE" message. Procedures are defined outside the main program and may be called from inside the main body of the program.

The 6502 based BBC executes Basic programs extremely quickly.

Machine code routines may be executed using either USR or CALL. This will be particularly useful for programs where areas of coding need to be executed at "Basic" speed like text instructions.

Most reserved words may be abbreviated i.e. L. for List or P. for Print. This system works for statements as well as direct command

entries. Upper and Lower case characters have different values in variables therefore lower case characters can not be used as reserved words.

The text display works in conjunction with the eight graphics modes. The maximum text display is in Mode 0 which will give you 80 x 32 characters, and the minimum — Mode 2 or 5 — which has a 20 x 32 display.

The BBC's graphical capabilities are far superior to any other machine in its price range. There are eight different modes with a maximum resolution of 640 by 256! The co-ordinate 0,0 is in the bottom left hand corner of the screen in all modes. Changing the graphics mode when graphics have been created on a given mode results in the machine replotting the points to fit the new mode. In other words a program that uses graphics will run in any mode and the coarseness of the plotting will adjust accordingly.

Plot v,x,y where v varies from 1 to 88 and x and y are the screen co-ordinates has 88 different options. This may be used for drawing lines, plotting points or even filling in defined areas such as rectangles, triangles or any irregular shape or area.

It is possible to mix the graphics and text windows and set them anywhere on the screen e.g. you could have a graphics window in the centre of the screen surrounded by text.

There are 16 colours available and the ability to change the drawing colour, background and text foreground. Of course, you are restricted to the number of colours allowed on the screen at any one time, depending on the mode in operation. In the text modes it is possible to colour each individual letter as desired.

Generally speaking the higher the resolution the less amount of colours allowed on the screen at any one time.

The BBC's sound generator is phenomenally good. There are four individual channels, 15 amplitude levels, 255 pitch variations and 255 variable durations. If that's not enough to contend with there is a 14 part envelope generator. It is possible to synchronise all four channels to form a chord by marking the appropriate note with the number of channels to play at once. The sound generator techniques may be confusing at first, but once mastered becomes a powerful tool.

KEYBOARD AND CURSOR CONTROL

The keyboard is good quality although slight "play" is apparent on all keys. It is housed in a plastic injection moulded case which is a little on the weak side. While on the subject of the case, it may also be of interest to know that it is not supported at all being impractical to house the monitor or disc drives on the top.

There are 74 keys each with a variable auto repeat feature. Located along the top of the keyboard are ten function keys. These may be used for anything from a simple function to a complex string of commands. They are easy to program too.

For example if you wanted to put "Print Sqr(A)" into function key number two, the

procedure would be as simple as *Key 2 "Print Sqr(A)".

There are three L.E.D.s which light when Caps Lock, Shift Lock and Cassette Motor are in operation.

Editing is unusual. The procedure is to list the appropriate line, use the cursor direction keys to reach the first character and then press the Copy key to produce a direct copy of the line, stopping when an insertion is needed or skipping a character if it is to be deleted.

PERIPHERALS AVAILABLE

Although Acorn supply a cassette recorder for about £26, you may use one of your choice as input is via a seven pin din socket, which can be computer controlled if you have a remote socket.

To load a program you must type "LOAD" or "CHAIN" followed by the file name. You may use "" as the file name to load the next program on the tape. Ease of data transfer is disappointing as one has to judge when the data sound is just right i.e. not too loud or soft and at exactly the right tone. Otherwise when levels are correctly adjusted, data transfer is a reliable source.

Single or double 5.25in disc drives are available from Acorn and retail for around £230 for single and £799 for double sided.

Other extra options available include a tele-text receiver, Micronet 800 adaptor, a colour or black & white monitor, dot matrix printer, voice synthesis and even a second 6502 processor — which gives you the ability to "down load" software over the telephone lines and gives you access to Prestel's 250,000 pages. One area that some enterprising manufacturer could look at is a joystick. There are none on the market that really work effectively — but we do have some top secret information that Vulcan Electronics are planning to release a good quality stick soon.

CONCLUSION

The BBC is an extremely versatile and adaptable machine, competitively priced when you take into account all it has to offer. Many high quality, low cost, games exist for the BBC, and you'll find lots of games listings in magazines like C&VG. It's also an ideal machine to start learning on — and it expands with you as you learn. It's advanced enough to cope with the experienced programmer. If you can afford one — go for it!

ACORN ELECTRON

HARDWARE

PROCESSOR BASED: 6502 A
RAM: 32K (non expandable)
ROM: 32K
POWER SUPPLY: external
R.F. OUT: phono socket
GAME PORTS
A-D CONVERTOR: 25 pin connector
VIDEO OUT (R.G.B.): 5 pin din
COMPOSITE VIDEO OUT: B.N.C.
OTHER CONNECTORS: Edge board expansion connector
KEYBOARD: 'Qwerty' style, 56 full travel keys
SOUND OUTPUT: on board speaker

SOFTWARE

SOUND: four individual channels, 15 amplitude levels, 255 pitch variations, 255 duration lengths, 14 part envelope generator
BASIC: Acorn Structured Basic
USER DEFINED GRAPHICS: maximum of 30 8 x 8 block grids.
COLOURS: 8 NORMAL: black, red, green, yellow, blue, magenta, cyan, white
8 FLASHING: black-white, red-cyan, green-magenta, yellow-blue, blue-yellow, magenta-green, cyan-red, white-black.
GRAPHICAL SYMBOLS: none

PRICES AND OTHER OPTIONAL EXTRAS

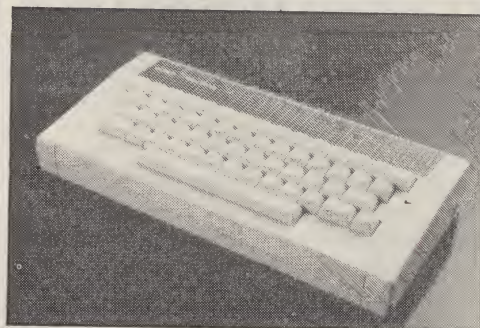
ACORN ELECTRON: £199 (inc. VAT)
12" B/W MONITOR: £90 (inc. VAT)
14" COLOUR MONITOR: £250 (inc. VAT)
ACORN DATA CASSETTE RECORDER: £26 (inc. VAT)
GAMES PADDLES (PER PAIR): £11.5 (inc. VAT)

OTHER AVAILABLE LANGUAGES (D=disc, C=cassette)

FORTH: £15 (C) +VAT/£18 (D) +VAT
LISP: £15 (C) +VAT/£18 (D) +VAT

MAIN SUPPLIER

BBC Microcomputer Systems
C/O Vector Marketing
Dennington Estate
Wellingborough
Northamptonshire NN8 2RL



The Electron may appear to some as a re-vamped model A. Retailing for under £200 and aimed at the Spectrum/Dragon market. Although it is in their price range, it offers superior capabilities.

Many of the BBC's features have been included on one chip on the Electron. Apart from this, there are other features which differentiate the two which we shall examine.

BASIC/GRAPHICS/SOUND

The Basic used by the Electron is almost identical to that on the BBC machine. It is slightly slower than the BBC, but still one of the fastest for its price.

A vast majority of BBC programs run on the Electron requiring little or no detail changes.

The Basic used is "Structured" which still excludes the Structured loop WHILE ... DO.

Upper and lower case characters are available and hold different values. They are distinguishable in variable names so variables may use reserved words as long as they are in lower case e.g. 10 print=1435456. Integer variables have absolute accuracy with a maximum size of 2,147,483,647. Like the BBC, string variables may be a maximum of 255 characters long.

The EVAL statement allows the user to input a numerical function e.g. 10*5/sqr(56), which will be EVALuated by the computer for use within the program if necessary.

Built into the system is an elapsed-time clock which has an assigned variable called TIME. It may be cleared or preset to any value and it is incremented every 1/100 of a second.

This feature is particularly useful for games playing where it may be necessary to time the player for input or reaction. Variables may be defined as 'local' within a procedure or function. Procedures may be defined from outside the program and can easily be called to from inside the main body of the program.

For direct memory manipulation, peek and poke are not used. Instead three operators are introduced. The symbols used are as follows: ?, ! and \$. These are used to poke a value into a location or return the existing

value (PEEK) operate peek and poke on four consecutive locations and place a string into memory respectively.

A full set of self explanatory error messages are used, requiring no referencing.

The Electron has ten programmable function keys. These could be used to good effect for commands like "LIST" or "RUN" a complex string of procedures.

For assembly enthusiasts, the Electron allows you to include assembly instructions within the bounds of a basic program for routines that require speed.

The hi-resolution graphics on the Electron are identical to that on the BBC except Mode 7 which, disappointingly, is not present. I say disappointingly as it only uses 1k of memory as opposed to the other modes memory usage of 8k to 20k! Other modes are intact giving you a range from 165 × 256 resolution up to an astonishing 640 × 256 resolution, and a text display ranging from a large characterised 20 × 32 display up to a generous 80 × 32 display — ideal for word processing!

While on the subject of resolution, the Electron — and BBC — have a marvelous unique resolution plotting system. 0,0 is in the left bottom corner with a theoretically 1280 points across and 1024 points upwards, regardless of what mode you are in.

When I say points don't mistake it for resolution, as a DRAW 1279, 1023 in Mode 2 will result in a diagonal line much thicker than the ultra fine diagonal line you will get with DRAW 1279, 1023 in Mode 0.

This system means that graphics created in any of the graphics modes, will also work in any of the other four graphical modes, re-adjusting the design to the available resolution! Now if that seems a little heavy, relax.

All other BBC graphical commands are available like DRAW, PLOT and MOVE, although the ability to scroll graphics sideways is only available through machine code. VDU can be used to redirect text and graphics windows, shade in assigned shapes, redefine characters and much more.

There are 16 colours available — eight normal and eight flashing. These can be used to good effect for drawing colour, background, background and text foreground. The amount of colours available within the various modes, generally decreases as the resolution increases. Text characters may be individually coloured if so desired.

The otherwise sophisticated sound on the Electron is spoilt by the inability to play two or more voices together. There is a 14 parameter part envelope generator.

KEYBOARD AND CURSOR CONTROL

The "QWERTY" style keyboard is really excellent — even better than the BBC's — and in my opinion is the best under £400! There is no 'play' which spoils the otherwise good quality BBC keyboard and it is very quiet too. There are 56 auto repeat keys altogether — 17 less than the BBC's — of which most have around three functions. On most keys are 'one entry' keywords — like the Spectrum — which are

optional — unlike the Spectrum!

These are accessed via the function key. The ten function keys — found separate from the keyboard on the BBC — are combined with the numerical keys 0 to 9. A few other keys found separate on the BBC are combined with other keys on the Electron — which explains its slightly smaller keyboard. Shift lock is missing. The case is beautifully designed and attributes to ones overall good impressions.

Cursor control and editing is also like the BBC. To edit a line, one must move the cursor up to the line with the direction keys, then press the copy key to reproducing a copy of that line at the block cursor — located underneath — stopping for insertions, or skipping unwanted characters. This is not one of my favourite features!

PERIPHERALS

There are sockets for domestic TV, R.G.B. monitor and composite video output. The R.F. output is clear and stable, but if you must have a colour monitor, they retail for around £230. There is no command for picture centring as on the BBC. On my standard colour television the top of the display was lost.

The Electron hasn't got all the output sockets that the Beeb has got so Acorn are planning an expansion box, to which hopefully disc drives, printer and Prestel could be connected. As yet I have no details of whether existing BBC peripherals will be compatible.

It also looks sceptical whether the more serious BBC expansions like extra processor — requiring 'tube' connector.

CONCLUSION

The Electron is an ideal machine for those of you who fancy owning a BBC B — but just can't afford one! It doesn't have the expansion potential of the BBC, but it's certainly a winner in terms of design, power, quality and competitive pricing. Although the Electron is in the lower price bracket it is unfair to compare its abilities to the Spectrum or Atari range. It's simply a superior machine — powerful enough to satisfy the most demanding gamer who wants his micro to do other things as well.

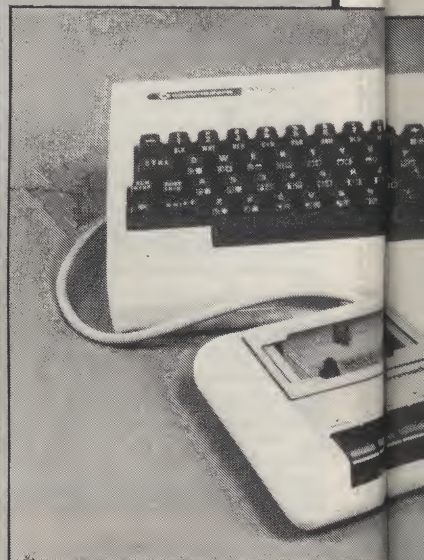
COMMODORE

HARDWARE

PROCESSOR BASED: 6502
RAM: 5K (expandable to 32K,
ROM: 20K
POWER SUPPLY: external
R.F. OUT: five din socket to
external R.F. modulator
GAME PORTS: nine pin Atari
compatible
VIDEO OUT: five pin din
SERIAL PORT: six pin din
USER I/O: 24 contact, printed
circuit connector
MEMORY EXPANSION: 44
contact, printed circuit
connector
CASSETTE OUT: 12 contact,
printed circuit connector
KEYBOARD: Qwerty style, 65
key, full travel
SOUND OUTPUT: television
speaker

SOFTWARE

TEXT DISPLAY: 23 × 22
characters
HI-RESOLUTION: 184 × 176
SOUND: four channels (voices)
three octaves, 15 volume
control settings
BASIC: Commodore 'New Rom'
Basic
USER DEFINED GRAPHICS: yes
COLOURS: black, white, red,
cyan, purple, green, blue,
yellow, orange, light orange,
pink, light cyan, light purple,
light green, light blue, light
yellow.
GRAPHICAL SYMBOLS: 68
*PRICES AND OTHER
OPTIONAL EXTRAS
VIC-20 COMPUTER WITH

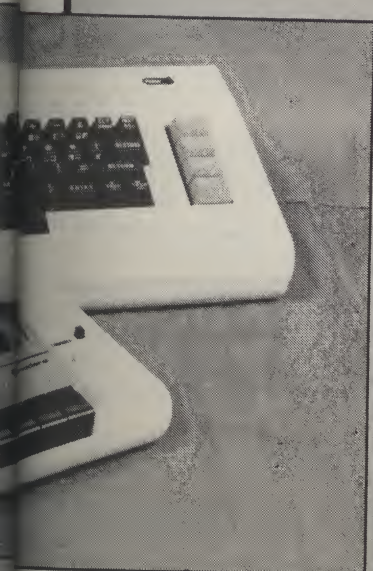


DORE VIC-20

CASSETTE RECORDER,
COMPILATION TAPE AND
INTRODUCTION TO BASIC
PART 1.: £150 (inc. VAT)
1541 SINGLE DISC DRIVE:
£229 (inc. VAT)
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C.P.S.): £229 (inc. VAT)
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£35 (inc. VAT)
PADDLES: £14 (inc. VAT)
JOYSTICK: £8 (inc. VAT)
VIC WRITER WORD
PROCESSOR: £25 (disc), £20
(cassette)

*prices correct at time of going
to press.

OTHER AVAILABLE LANGUAGES
(C=cartridge, S=soft)
FORTH: £39 (D), £20 (C)



When Commodore announced the arrival of their Vic-20 computer in August 1981, it was considered a very good value for money package, at under £200 it incorporated hi-resolution colour graphics, a full travel keyboard and a sophisticated sound generator. The Basic that it uses is the standard Commodore Basic.

At the time its closest rivals were the Tandy Colour Computer and the Atari 400.

For those potential buyers who are comparing the Commodore-64 with the Vic-20, it must be noted that the 64 has not only great potential as a games machine but as a business machine, whereas the Vic-20 is really aimed directly at the home user market.

The Vic initially contains only 3.5k of user RAM! However, an eight or 16k expander cartridge is available.

The Vic-20 is one of the most readily available computers around, being obtainable at most hi-fi and computer shops across the nation. Its closest rival today is the Spectrum which has also been reviewed elsewhere in this supplement. For around £140 or less, today's Vic-20 buyers will get the main console, a cassette deck (previously retailing for around £44), a compilation game cassette and a written introduction to Basic.

BASIC/GRAPHICS/SOUND

The Basic used in the Vic-20 is Commodore's Basic Version 2.0. Unfortunately it is not very fast so it makes it impractical for high speed graphical animation. All of the usual features of Microsoft Basic are present. There is a full set of error messages which are self explanatory, eg "bad subscript error" or "formula too complex error", unlike other machines' coded error messages which require tiresome referencing.

All Basic keywords can be entered in a shortened form. These are mostly two or three characters long. For example the abbreviation for READ is represented by R 'SHIFT' E.

The text character display is disappointingly small, only 22 x 23 characters. On the good side lower and upper case letters are available by touching the Commodore logo key with either business or full graphical symbols.

The Vic was named after its Video Interface Chip which plays an important role within the computer. It is primarily used to handle sound routines, graphics joystick and light-pen control. This can be manipulated by the user to alter its operations to suit the intended application.

Its internal registers control areas like where the location of the screen window occurs, the whereabouts of the character set or where the screen RAM may be found.

There are eight programmable functions, which can easily be programmed to activate anything from a short function to a string of commands accessible at the touch of a key.

Compared to the Spectrum the Vic's graphics are feeble giving only 184 x 176 resolution as opposed to the Spectrum's 256 x 192. It is possible though difficult to create user defined graphics on an 8 x 8 block grid,

and to alter the character set pointer to point to characters that you have designed, which may then be accessed via the keyboard.

By adding the super expander plug-in cartridge you will have access to fairly powerful graphics features. These include CIRCLE — which gives you the ability to create variable sized circles and PAINT — which allows you to shade in specified areas or shapes.

It must be noted that having said hi-resolution graphics are available, unless you own the super expander cartridge you will find them incredibly difficult to use. For example, if you wanted to draw a line between say the points 0,0 to 100,80 you would have to poke each individual location in memory for each point on the screen making it a laborious job to create a simple picture.

Other simple graphical techniques are obtained by using the 64 piece graphics character set, colouring the blocks if necessary. This is implemented by poking the 22 x 23 text screen locations with the appropriate graphical character code.

There is a total of 16 colours. However, there are limitations. The border can only be one of eight colours, the background may use one of 16 colours and the hi-resolution allows you to use only two colours (foreground and background). If desired, text characters may be individually coloured.

The Vic's sound capabilities are advanced and flexible. It has four channels which include three voices (Alto, Tenor and Soprano) and also a white noise channel. The sound is output through the TV speaker, so the volume may be adjusted on the TV or from the computer's pre-amplified 15 volume levels. There are just over three octaves altogether and voices may be synchronised to play simultaneously.

The white noise channel allows you to create almost any type of sound and may be used in conjunction with the other three voices if desired. The manual thoughtfully supplies you with 20 different sound settings that range from a wolf whistle to the rushing sound of ocean waves!

KEYBOARD AND CURSOR CONTROL

The keyboard on the Vic-20 is the same excellent one also found on the CBM-64. It is slightly curved to aid ease of typing. Down the right hand side of the keyboard are the four function keys each with two functions.

The keys are supported by a metal plate which stops the circuit board bending if a key is struck hard. Included are "shift lock" and "run/stop" keys. All graphics symbols and colours are accessible via the keyboard.

Also like the 64, and other Commodore machines, cursor control allows you to "insert" and "delete", move cursor up, down, left or right. One useful feature is that after editing a character or word in a program line, you may press "Return", there is no need to go to the end of the line. You may also move the cursor to any character, change it and press Return. This is known as "Full Screen Editing".

PERIPHERALS AVAILABLE

A dedicated cassette recorder is supplied with the computer. It is the standard Commodore version with fixed volume and tone controls for trouble free loading. The cassette is a reliable data transfer source, and will load programs first time!

A disc drive is available from Commodore but few commercial programs have been produced on disc. It will set you back about £225.

The games port is compatible with Atari-type joysticks, and there's plenty of those on the market to choose from!

Other peripheral devices available from Commodore are three types of printer and a colour monitor. Neither Light Pen nor Graphics Tablet seem to have been planned by either Commodore or any electronics independents, and I doubt if any will.

CONCLUSION

This machine is ideal for children or beginners who want to learn the fundamentals of programming. The price has dropped to a very reasonable price — around £99 — with the cassette player and programming aids thrown in thanks to tough competition from the Spectrum. You may like to add the super-expander to your Vic for about £35 — without this it has very little to offer the more advanced games player/writer. The machine's graphic text and expansion limitations will discourage the serious games programmer. On the plus side there is still a lot of games software around for the now rather elderly Vic-20.



THE COMMODORE 64

HARDWARE

PROCESSOR BASED: 6502

RAM: 64 (non expandable)

ROM: 20K

POWER SUPPLY: External

R.F. OUT: Phono:channel 36

GAME PORTS: Two Atari compatible

KEYBOARD: 66 "Qwerty" style,

full travel, four double

programmable function keys

SOUND OUTPUT: television speaker or hi-fi system.

SOFTWARE

TEXT DISPLAY: 40 × 25 characters

HI-RESOLUTION: 320 × 200 lines (64000 pixels)

SOUND: Three voices, eight octaves, wave shape

programmable using envelopes (ADSR)

BASIC: Commodore basic.

Same version as VIC-20 and new ROM Pets.

USER DEFINED GRAPHICS: Up to eight sprites on a 21 by 24 block grid

GRAPHICAL SYMBOLS: 61 (on keyboard)

PRICES AND OTHER OPTIONAL

EXTRAS (inc VAT)

COMMODORE 64: £199

DISC DRIVE (5.25"): £225

COLOUR MONITOR: £230

CASSETTE UNIT: £44

DOT MATRIX PRINTER 1525: £230

LIGHT PEN: £20

OTHER AVAILABLE LANGUAGES

(C=cartridge, s=soft)

FORTH (C): £P.O.A.

Z80 CARD CP/M (S): £P.O.A.

PASCAL (C): £P.O.A.

LOGO (S): £P.O.A.

COMAL (C): £P.O.A.

PILOT (S): £P.O.A.

*prices correct at time of going to press

For those considering a Commodore Vic-20, it may be worth your while (if you can stretch your budget) to look at the Commodore-64.

The CBM-64 was initially a replacement for the Vic-20. It's far superior with powerful graphics, sound and memory.

The CBM-64 originally retailed at £350 but now, due to competition from Atari, the price has dropped to around £225, although it is possible to find one for below £200.

The machine contains a hefty 64k of RAM leaving about 32k to the user. This should be enough to accommodate the most sophisticated and lengthy of games. The machine has such a large memory as it was primarily built for business purposes but it obviously suits advanced games too! 20k of ROM is also included which is used for the powerful graphics, sound and Basic that the machine uses.

BASIC/GRAPHICS/SOUND

The CBM-64 uses the same Basic as the Vic-20 — and the new ROM Pets — although there are other hardware features which differentiate the two and disqualify compatibility. The screen display is 40 characters by 25 (upper or lower case) as opposed to the Vic's 22 × 33 character display. This will cause problems if trying to run a Vic program on the CBM-64, as for example, references to locations in the revised Video Interface Circuit will differ. The hi-resolution graphics offer 320 × 200 resolution with a choice of 16 colours for drawing, background, border and coloured text.

One particular graphical feature which is extremely useful is the ability to create and manipulate sprites. This is a feature that any serious games writer will need, whether writing in Basic or Assembly language.

You may draw an object say an alien on a 21 × 24 block grid. Each individual block may be a different colour if necessary. When the object is complete you can store the sprite in memory by a series of poke statements, and recall the sprite to any part of the screen, and move it around if necessary.

Up to eight sprites can be stored at any one time. The Video Interface Circuitry allows sprites to move over each other. One sprite may be given a higher priority so that the others may appear to pass behind it. A sprite collision indicator may be called from the program. This would be necessary in fast action games for missile hit or explosion target for example. Sprites may also be given high or low priority when passing in front of or behind text.

Sixty-one graphical symbols are also available which may be used in the 40 × 25 text character mode.

The CBM-64's sound capabilities are



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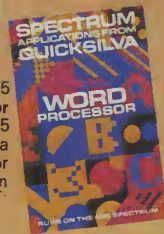
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20004 Graphics Pack (Utility) £6.95 (16K)
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Oric 1
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40029 Grail (Adventure) £6.95 (48K)
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BBC 'B'
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Machine

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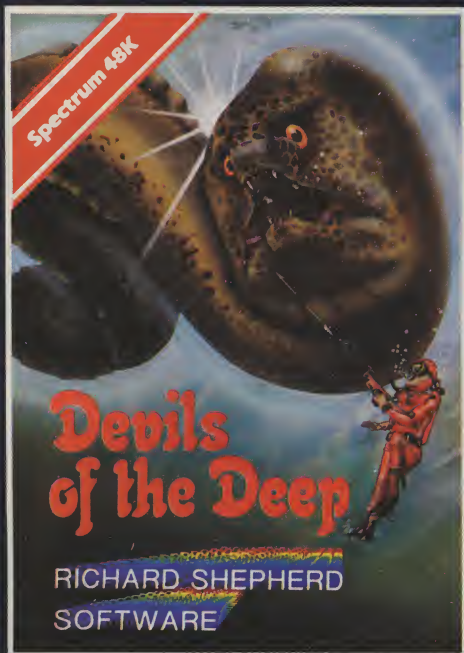
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Spectrum 48K
Commodore 64



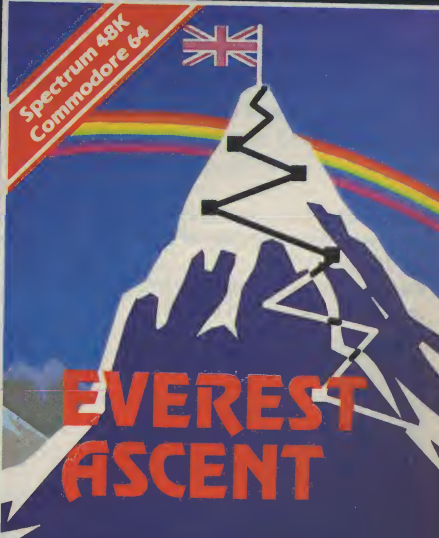
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Spectrum 48K
Commodore 64



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powerful, offering three voices in eight octaves. Envelopes (ADSR) may be developed allowing one to create the right sound effect for the purpose intended. This method determines the shape of the sound curve. Sound may be outputted through the television speaker or hi-fi system.

KEYBOARD AND CURSOR CONTROL

The "Qwerty" style keyboard is excellent, easy to use and is bounce free. It has 66 keys in all with four programmable keys incorporating eight functions — two per key. Graphics symbols — characters — and colour selection may be made from the keyboard via the control key. One useful feature is the shift lock key. The keyboard is housed in a strong moulded plastic casing.

Cursor control is the same as all other Commodore machines using three keys plus the shift key to allow the user to delete or insert text — which some otherwise good micros lack — move left, right, up or down.

PERIPHERALS AVAILABLE

If cassettes are to be used for data storage purposes, a Commodore cassette player will have to be purchased. This has a unique interface connector and is computer controlled having fixed volume and tone levels.

For the more serious user Commodore 5 $\frac{1}{4}$ " disc drives are available. These are half the normal height and retail for around £225 which is comparatively cheap.

It is possible to connect the CBM-64 to Pet double drives — 8030 or 8050 — but in this ease an IEEE 488 interface and new operating system (DOS) will be necessary. The interface will set you back about £60.

There are plenty of good Atari compatible joysticks available from Commodore and other electronics independents. Joystick prices start at around £10 and go up to about £50 for a really good remote control one! A light pen may be obtained for around £20 and a Commodore printer may be plugged into the serial port socket located at the back.

CONCLUSION

The Commodore 64 will eventually supercede the Vic-20. It offers powerful graphics, sound and that big 64k memory. An increasing amount of software is becoming available for this new micro, and with the pre-Christmas drop in price it is well worth considering — if you can stretch your budget to around £285 which will include the Commodore cassette player.

THE SORD M5

HARDWARE

PROCESSOR BASED: Z80A 3.58 MHz

RAM: 20K-4K user RAM

ROM: 8K-expandable to 16K

POWER SUPPLY: external

R.F. OUT: phono socket

GAME PORTS: two × six pin mini din

VIDEO OUT: phono socket

SOUND OUT: phono socket

SERIAL PORT: built in

centronics interface-16 pin

KEYBOARD: 55 key touch

sensitive membrain

SOUND OUTPUT: television speaker

CASSETTE I/O: eight pin din socket

SOFTWARE

GRAPHICS AND TEXT MODES:

text, 24 × 40 characters GI, 24

× 32 text and keyboard

graphics characters multi-

colour, "tessalated" 4 × 4

matrix graphics patterns GII, 256

× 192 resolution, up to 16 × 16

size graphical sprites plot,

draw, circle, box, bar, paint-

BASIC-G

COLOURS: transparent, black,

green, light green, deep blue,

light blue, deep red, cyan, red,

light red, deep yellow, light

yellow, deep green, purple,

grey, white:- background,

"backlight plane", sprite,

character or pixel may be

individually coloured. colour

code from \$0 to \$f (hex)

SOUND: six octaves, 15

volumes, 255 tempos, 8

envelope shapes, three voice

harmony, four channels

including noise generator

BASIC-I: integer

BASIC-G: integer-advanced

graphics

USER DEFINED GRAPHICS: up

to 224 characters

GRAPHICAL SYMBOLS: 128 —

including Greek italics.

SPRITE DEFINITION: max 32

individually controlled, 16 × 16

or 8 × 8 definition; 0 to 31

priority level

PRICE

SORD M5 COMPUTER: £190

OTHER AVAILABLE LANGUAGES

BASIC-G: £35-advanced

graphics

BASIC-F: £35-floating point

arithmetic

FAL-C: £35-applications

package



What makes a good machine is a combination of quality and value for money. The Sord M5 (by CGL Home Computers) has broken into the sub £200 market retailing for around £190. For that price you get the basic machine, a rather large external power supply, television lead, Basic I cartridge — a very simple and limited integer Basic — and joypads!

There is 20k of RAM. A full 16k is taken up for video RAM, giving superb graphic capabilities. There are three types of Basic available, of which two we shall investigate. The processor used is the Z80A running at 3.58MHz with only 8k of ROM (expandable to 16k with the expansion cartridge).

BASIC/GRAPHICS/SOUND

The Basic-I cartridge is very limited in terms of functions and capabilities. For starters its calculations are integer only with a range of -32767 to 32767. If a decimal is used in a calculation, the result will be "syntax error"! Also, exceeding the integer range limit during the steps of a calculation, i.e. 10 PRINT (100 * 1000/1000) will give you an overflow error, even though the final result of the calculation is in range.

Keywords may be entered by one key press via the function key, although this is, thankfully, optional.

Both upper and lower case characters are available but hold the same values, so LIST and list would be acceptable, also LET A = B would be the same as LET A = b and so on.

Variable names may be up to a maximum of 16 characters long which is quite adequate. LET statements are optional as with the variable reference in NEXT.

When inputting lines, the computer will put a space between the line number and first character but will not separate Keywords. If you do not put a space after a Keyword, it will result in a syntax error. This procedure is extremely annoying and will prove frustrating especially to newcomers in the programming field.

Read and Data statements are also limited. Firstly data containing alphanumerics must be separated by commas and quote marks, ie.


```
DATA "a", "b", "c" etc. and you are not
allowed to read straight into an array, e.g. . . .
10 FOR a = 1 to 10
20 READ s(a)
30 NEXT a
```

Arrays of any size have to be dimensioned. A new command normally found on more expensive machines is HEX\$(). This is used to return the hexadecimal value of the string enclosed in the brackets. Error messages is another area which would not be helpful to the newcomer.

Basic-I is not equipped for complex graphics, but can produce simple graphics symbols. These are accessed via FUNCTION together with "3". By simply inserting special control codes in the PRINT statement it is possible to scroll the screen in four directions.

To use the M5 to its full, a Basic-G cartridge will have to be purchased. This will turn the M5 into a very powerful graphics machine which is ideal for games. It contains all the features mentioned in Basic-I and many more.

Built into the Basic are some impressive interrupt and timing features. For interruption of the keyboard and joystick, ON KEY GOSUB and ON JOY GOSUB are used. Error handling is controlled by ON ERROR GOSUB.

There are four screen modes to choose from. These are text mode, which gives a 24 × 40 display — 8 × 6 — character grid; GI, which gives a 24 × 32 text display plus all the graphics symbols; multi-colour mode which can't display text but 'tessellated' graphics patterns, from graphical symbols — 4 × 4 dot matrix size — corresponding to ASCII codes 32 to 255; and finally GII, the hi-resolution mode with full size sprites.

Up to 32 sprites can be displayed and moved individually. You have the option of creating a sprite on a 16 × 16 or eight by eight block grid. Similar to sprites on the Commodore 64, they are each given a priority level — from 0 to 31. The lower the level, the higher the priority, so a sprite of level five will 'eclipse' a sprite of level six and so on.

The statements used to manipulate the sprites are: LOC, location of the sprite on the screen; SCOD, to assign the sprite code; SCOL, to colour the sprite and ERASE, followed by the sprite code to erase it. DISC and DRCT are used to calculate the distance between sprites.

As well as sprite creation, there is a potential of 224 user definable characters. The high-resolution graphics give a 256 by 192 display. There are some other powerful statements too. PLOT is used to plot a single point; GMOVE to position the graphics cursor; DRAW to draw a line from graphics cursor to the given co-ordinates; BOX, used to draw a square or rectangle and BAR, the same as BOX but solid.

Two even more powerful statements are CIRCLE and PAINT, used to shade an enclosed area.

Initially there are two alternate screens — screen 0 and screen 1. It is possible to enter text into one while the other is being displayed, transfer text in one screen to the other — or vice versa — or rapidly switch between the

two. View windows may also be set up. These are formatted VIEW X0,Y0,X1,Y1, where X0, Y0 are the upper left corner, and X1,Y1 are the lower right corner.

Sound generator techniques are also very sophisticated. There are six octaves with 15 variable volume settings, 255 variable tempos, four channels and eight preset envelope shapes!

KEYBOARD AND CURSOR CONTROL

The keyboard is the 'touch sensitive' type — similar to the Spectrum. It has a much more solid feel than the Spectrum, needing the minimum amount of pressure to activate a key. The keys are an odd shape, some square and some rectangular, with the bottom right hand corner chopped off! Most keys have three functions though others have an extra control function, e.g. mode GII.

The letters A to Z have FUNCTION accessible keywords. Each Key produces a click through the TV when pressed. This may be turned off if desired.

Editing is simple. There are four keys which when used in conjunction with the control key move the cursor up, down, left and right. Operating SHIFT + DEL will delete a character, and CONTROL + "P" is used for inserting text. Once an insertion or deletion has been performed, you may press RETURN, as the computer will input everything before and after the cursor on that line number.

PERIPHERALS AVAILABLE

You may use any cassette recorder of your choice. The cassette input is an eight pin din socket which supports a remote facility.

Apart from Basic-I and Basic-G, there are two other ROM cartridges. These are Basic-F — designed for floating point arithmetic — and FALC-applications package. No information or other languages like Pascal or Forth has been released yet, but there are plans for a 32k memory upgrade.

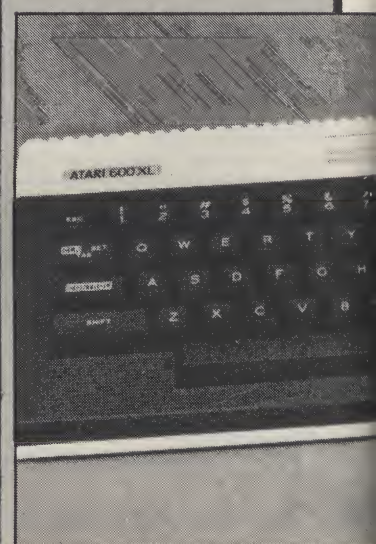
CONCLUSION

The Sord M5 is a quality machine with some powerful features. But, without the Basic-G cartridge it is nothing special. The cartridge will set you back about £35 — upping the price of the machine to £225. The vast amount of memory taken up for graphics means that most of the graphical implementation is already set up for you, and this makes the 4k user RAM look not so bad.

ATARI

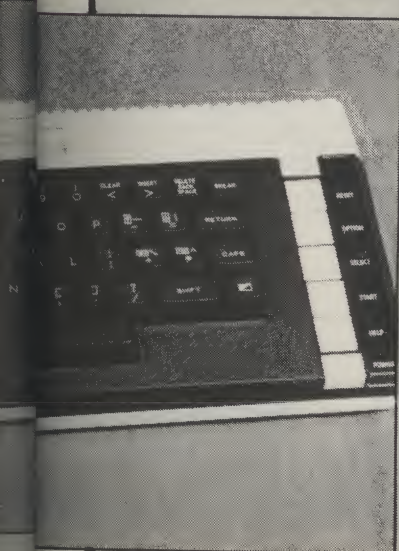
HARDWARE

PROCESSOR BASED: 6502
RAM ATARI 600XL: 16K standard
RAM ATARI 800XL: 16K expandable
ROM: 10K
POWER SUPPLY: external
R.F. OUT: phono
GAME PORTS: 2
VIDEO OUT: 5 pin din
SERIALPORT: 13 pin
KEYBOARD: 55 'Qwerty' style full travel
SOUNDOUTPUT: television speaker
NEWCASSETTE 1010: 600bps, 100K bytes, 4 track, 2 channel, auto playback, volume, 3 digit tape counter, digital/audio
NEWDISCDRIVE 1050: built-in 6507 microprocessor, on board ROM, auto standby, capacity, dual density, single sided
SOFTWARE
GRAPHICS AND TEXT MODES:
MODE 0: 40 × 24 text; MODE 1: 20 × 24 text; MODE 2: 20 × 12 text, five colours; MODE 3: 40 × 24 graphics, 4 colours; MODE 4: 80 × 48 graphics, 2 colours; MODE 5: 80 × 48 graphics, 4 colours; MODE 6: 160 × 96 graphics, 2 colours; MODE 7: 160 × 96 graphics, 4 colours; MODE 8: 320 × 192 graphics, 2 colours; MODE 9: 80 × 192 graphics, 1 colour; MODE 10: 80 × 192 graphics, 9 colours; MODE 11: 80 × 192 graphics, 16 colours; MODE 12: 40 × 24 graphics, 5 colours; MODE 13: 40 × 12 graphics, 5 colours; MODE 14: 160 × 192



600 XL

graphics, 2 colours; MODE 15: 160 × 192 graphics, 4 colours
COLOURS: grey, gold, orange, red-orange, pink, pink-purple, purple-blue, blue 1, blue 2, light blue, turquoise, green-blue-green, yellow-green, orange-green, light orange.: luminosity level between 0 to 15.
SOUND: four voices, 15 sound variations-distortion-,255 pitch variations and 16 sound levels.
BASIC: Atari extended Microsoft Basic.
USER DEFINED GRAPHICS: yes
8 × 8 block grid
GRAPHICAL SYMBOLS: 26
PRICES AND OTHER OPTIONAL EXTRAS
ATARI 600 XL: £160
ATARI 800XL: £249
CASSETTE UNIT: £45
CASSETTE 1010: £49
COLOURPRINTER
LETTER: £199
LETTERQUALITY
PRINTER 1027: £299
DISC DRIVE 810: £269
DISC DRIVE 1050: £299
CP/M: £P.O.A.
TOUCH TABLET: £70
TRACK BALL: £40
LIGHT PEN: £P.O.A.
OTHER AVAILABLE LANGUAGES (C=cartridge, S=software)
MICROSOFT (D): £60 (inc. VAT)
PILOT (consumer): £60 (inc. VAT)
PILOT (educater): £90 (inc. VAT)
ATARI LOGO: £60 (inc. VAT)
MACRO ASSEMBLER: £60 (inc. VAT)
ASSEMBLER EDITOR: £40 (inc. VAT)



It's not often that a new computer system is heavily backed up by software, experience. The Atari 600 XL is one such computer. It's a modernised and extended version of the now famous Atari 400 and 800.

The 600 XL will retail for around £160 and the 800 XL for around £250. There are some major aspects which differentiate the 600XL and the previous Atari 400/800 models.

BASIC/GRAPHICS/SOUND

The Basic used is standard Atari Basic with a few additions to the graphics. Unlike the 400/800 the Basic is already built into the machine and is operative the moment you switch on.

One interesting new feature is the SELF TEST mode. This is accessed by either holding down SELECT before and after the computer is turned on, or inputting the command "BYE". You have then a four option menu. The first is "MEMORY" which tests all ROM/RAM and reports if any are malfunctioning.

The second is AUDIO/VISUAL which checks the graphics and musical channels. The third checks the keyboard, while "ALL TESTS" runs through everything.

There are 15 modes altogether as opposed to the 12 on the 400/800 models, with a maximum resolution of 320 - 192. Three modes are provided for text and graphical characters, while the other nine are used for full screen graphics or mixed graphics and text.

PLOT will plot a single point, and DRAW will draw a line to a specified position from the last coordinate used.

A potential 256 colours can be created by varying the luminosity from 1 to 16 in conjunction with the 16 available shades. SETCOLOUR is used to set the shade and luminance of the chosen colour. These will include background, border or drawing colour. Alternatively, COLOR is used in modes three to eleven for the PLOT statement. Atari still provide no conceivable way of turning off the "auto colour variation" which operates after a specified time if no key has been pressed.

Sound is produced using SOUND C,F,D,V, where C is the channel number - zero to three, F is the frequency, D is the distortion-pure tones and sound effects, and V is the volume setting from zero to 15. These channels may be synchronised to perform simultaneously.

KEYBOARD AND CURSOR CONTROL

The "Qwerty" style keyboard is very reminiscent of the Atari 800 model. There are 56 full travel keys altogether with either upper or lower case lettering. Most of the keys have auto repeat facility.

The 800's rather large reset, option, select and start have been replaced on the 600 by small flush metal buttons, which contribute to the 600's rather neat design. One new addition is the "help" key.

There are seven editing keys for cursor manipulation. When used in conjunction with CONTROL, four keys are used to move the cursor up, down, left or right. CONTROL

DELETE BACKSPACE will move character to the right of the cursor, deleting each character in turn; DELETE BACK SPACE will move the cursor left, deleting characters; CONTROL INSERT is used for inserting text; SHIFT INSERT will insert a line space; SHIFT DELETE BACKSPACE will delete a line and SHIFT CLEAR will clear the screen and home the cursor.

CONTROL A to Z accesses the 26 graphical characters - another set of inverse duplicate characters are available through PRINT CHR\$(128-154).

PERIPHERALS AVAILABLE

The Atari 600 XL uses a dedicated cassette - the same as the 400/800, which has twin channels, one for data and the other for music or voice. It is capable of storing 100k on a 60 minute tape and transfers data at 600 baud.

Into the same peripheral socket can be connected the new 1050 controlled logic disc drive. Colour, dot matrix and letter quality printers are also available.

Only two joystick ports exist as opposed to four on the Atari 800. As mentioned, the program-or ROM socket is compatible with all previous Atari 400/800 cartridges.

At the back of the machine is a parallel bus. This will be used to take the 48k memory expansion. In addition, a general expansion box with several slots will be available in April '84.

Into this could be plugged a whole host of goodies like voice synthesis or perhaps dual processor - let your imagination wander! I'm not sure what the power supply will look like as mine was a rather oversized prototype, but it connects with a seven pin din socket - not compatible with previous Atari power supplies. Finally there's a five pin din socket for connection to a colour monitor though Atari don't make their own!

All of this makes it a worthy son of the Atari 400/800 range - and an ideal games machine.

CONCLUSION

The Atari 600/800XL range is more flexible and adaptable than its predecessors. The 600XL is a beautifully designed machine, and like all Atari's, is a great micro for games players. However the 16k machine, priced at around £160 will meet strong opposition in the shape of the more powerful Acorn Electron. Mind you, Acorn don't have over 1,000 readily available software titles!



ATARI 400/800

HARDWARE

PROCESSOR BASED: 6502
 RAM ATARI 800: 48K standard
 RAM ATARI 400: 16K
 ROM: 10K
 POWER SUPPLY: external
 R.F. OUT: built in wire
 GAME PORTS: 4
 VIDEO OUT: 5 pin din
 SERIALPORT: 13 pin
 KEYBOARD -800: 61 'Askey' style full travel
 KEYBOARD -400: 61 'Askey' style touch sensitive
 NEWCASSETTE 1010: 600bps, 100K bytes, 4 track, 2 channel,
 NEWDISC DRIVE 1050: BUILT-IN 6507 microprocessor, on board ROM,
 TEXT DISPLAY: 40 × 25 characters

HI-Res	LUMIN	COL	MEM
40 × 24	4	4	.25K
80 × 48	2	2	.5K
80 × 48	4	4	1K
160 × 96	2	2	2K
160 × 96	4	4	4K
320 × 192	2	1	8K
80 × 192	16	1	8K
80 × 192	9	9	8K
80 × 192	1	16	8K

SOUND: four voices, 15 sound variations-distortion-, 255 pitch variations and 16 sound levels.
 BASIC: Atari extended Microsoft
 USER DEFINED GRAPHICS: yes
 GRAPHICAL SYMBOLS: yes
 PRICES AND OTHER OPTIONAL EXTRAS
 ATARI 800: £269
 ATARI 400-16K: £135
 CASSETTE UNIT: £45
 CASSETTE 1010: £49
 COLOUR MONITOR: £P.O.A.
 COLOURPRINTER LETTER: £199
 LETTERQUALITY PRINTER 1027: £299
 DISC DRIVE 810: £269
 DISC DRIVE 1050: £299
 CP/M: £P.O.A.
 GRAPHICS TABLET: £P.O.A.
 TRACK BALL: £P.O.A.
 LIGHT PEN: £P.O.A.
 OTHER AVAILABLE LANGUAGES (C=cartridge, S=software)
 MICROSOFT (D): £60 (inc. VAT)
 PILOT(consumer): £60 (inc. VAT)
 PILOT (educational) £90 (inc. VAT)
 ATARI LOGO: £60 (inc. VAT)
 MACRO ASSEMBLER: £60 (inc. VAT)
 ASSEMBLER EDITOR: £40 (inc. VAT)

Due to massive price decreases Atari computers are becoming more affordable to a wider range of micro users. When the Atari 400/800 was launched, the 800 retailed at around £600 and the 400 for around £400. The only main differences were the keyboards and the amount of memory supplied. If the 400 is brought up to 800 memory specifications it will be fully compatible. Many dealers selling the machines will add the extra memory to the 400 and sell it as a fully expanded machine, although Atari do not officially recommend it.

Although Atari describes both machines as all purpose micros they are built in many aspects as games machines and little business or scientific application programs exist. Also it is worth noting that on buying an Atari for programming purposes neither machine comes with Basic, this can be purchased for around £40 as a plug in cartridge.

Atari say that they expect to include the Basic cartridge plus a couple of manuals in with the price this Christmas.

BASIC/GRAPHICS/SOUND

Atari Basic is fairly standard Microsoft but unfortunately rather slow. It uses the 6502 microprocessor. String variables of up to 100 characters are allowed with a maximum of 128 variable names. The 800 comes with 48k of RAM and 10k of ROM. The memory is divided up into blocks of 16k-plug in cartridges. The 400 may also be expanded from the originally specified 16k to 48k and 10k of ROM.

Now we come to the bit you've all been waiting for — graphics! Atari graphics are excellent, giving the games programmer great potential for fast, colourful action games (providing they are in machine code!)

Inside the Atari the graphics chips have 12 different modes altogether — but the manual does not explain this fully. These modes vary in resolution together with the number of colours available.

The maximum resolution is a 320 × 192 line display although using only one colour. To get the full use of 16 colours one must use the 80 × 192 resolution. Other combinations of colours and resolution can be found in the rest of the modes.

Graphics functions are fairly powerful too. To draw a line first you must specify the starting position — ie PLOT x, y — then you may draw to another point on the screen — ie DRAWTO x2, y2. From there on you can continue to use the draw statement to draw to following coordinates.

One powerful feature is the ability to shade specified areas on the screen which saves a lot of tiresome calculation.

You have the option of using full screen of mixed graphics and text. A full set of graphics

characters are available as well as the ability to create user defined graphics.

Colour is one area where the Atari excels. There are 16 colours altogether each with a luminosity of 1 to 16 giving a potential of 256 colours in total. Some amazing graphics have been created using this technique and the result is almost a life-like graphical representation.

The SETCOLOR statement is useful though takes time to get used to, as there is a separate COLOR command as well, ie COLOR 1. SETCOLOR uses three parameters — background colour, border and drawing colour — SETCOLOUR BA, BO, D.

It is also possible (by one command) to change all pixels on the screen of one particular colour to a different colour.

Atari sound will be familiar if you've ever walked into an arcade! Four voices, 15 sound variations, 255 pitch variations and 16 sound levels are used. It is possible to create almost any type of sound varying from the mellow harmonies of Chopin to the rocket blast whirl of an extra-terrestrial space ship on the ram-page! Sound is output through the television speaker.

It is hard to criticise Atari sound but it lacks a duration parameter. This is resolved by the laborious use of nested loops.

KEYBOARD AND CURSOR CONTROL

The Atari 800 full travel keyboard has a nice feel though it is not perfect. I found the blip-noise — as a key is touched — irritating to the point of distraction. There are 61 keys in all including option, start and select keys. Four keys are used to move the cursor up, down, left and right and these are used inconjunction with the control key.

Delete/backspace is on one key while insert is separate. Either upper or lower case characters are available. As well as graphics characters which are accessible via the control or escape keys.

The Atari 400 keyboard incorporates all the keys on the 800 model but instead is only touch sensitive similar to that of the ZX81. I found that I had to press quite hard to get a contact. There is however a shallow rim around each key to help your finger select it!

If your price bracket falls inline with the 400



but you dislike the keyboard, you will be pleased to know you can replace it with a full travel one, for about £30.

PERIPHERALS AVAILABLE

Both cassette and disc drive are available for both micros. The cassette has a special interface, similar to that of the Commodore — so whether you already own a cassette or not you will have to fork out an extra £45 for an official one!

Actually the Atari's cassette is quite special. It has a stereo head for twin channel output. One channel is used for the data and the other for the voice or music.

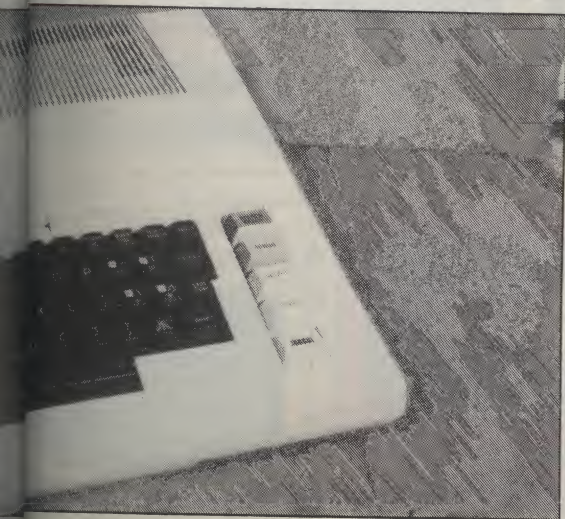
Atari says that a new cassette will be available in the near future for around £50. It incorporates four tracks, two channels, auto playback facility and digital/audio signal.

Atari make a 5¼ inch disc drive which retails for around £269. This plugs into the side of the computer and the cassette may then be plugged into the disc drive!

Among the other products planned for the near future are a graphics tablet, C/PM, track ball, light pen colour and letter quality printers.

CONCLUSION

Now that the price of both the 400/800 have dropped they are both well worth considering. The 400 will perform just as well as an 800 when fully expanded. The machines are heavily backed by a range of high quality games software — although this is often pretty expensive compared to other machines. At around £269 for the 800 and £135 for the 400 we reckon these machines are worth taking a look at.



THE ORIC-1



HARDWARE

PROCESSOR: 6502
RAM: 16k or 48k
ROM: 16k-operating system and Basic interpreter.
GAMES PORTS: none
PARALLEL PRINTER PORT: 20 pin "Centronics type" connector
KEYBOARD: 57 key, membrane type-auto repeat
SOUND OUTPUT: on board speaker

SOFTWARE

TEXT DISPLAY: 29 × 27
HI-RESOLUTION: 240 × 200
SOUND: six octaves, 15 volume levels, noise and pure tone channels, six preset envelope shapes, four preset sounds — SHOOT, EXPLODE, PING and ZAP

BASIC: Oric "Microsoft type"
USER DEFINED GRAPHICS: 8 × 8 block grid
COLOURS: black, red, green, yellow, blue, magenta, cyan, white
GRAPHICAL SYMBOLS: Oric block graphics + italic greek characters

PRICES AND OTHER OPTIONAL EXTRAS

ORIC-1 16k: £99.95
ORIC-1 48k: £139.95
MICRO DISC DRIVE 3": £200
COLOUR PRINTER/PLOTTER MCP-40: £170

Despite a circulation of around 30,000 machines in France, the Oric-1 has never really taken off in Britain.

A small computer with a Spectrum-style keyboard, limited graphics and a price under £100, is bound to be compared with the popular Sinclair computer. Unfortunately the Oric-1 falls far short of the Spectrum.

The Oric-1 was introduced as the first computer under £100 with hi-resolution graphics, colour and sound. Although this may sound attractive, the main problem was that the Oric's potentially good features were badly implemented. The manual is badly documented and the ROM is full of bugs!

However we have secret plans of a new ROM which will hopefully iron out all the defects — but as yet there is no date for release.

The Oric with 16k retails for around £100, and the 48k version for around £140—more expensive than the Spectrum.

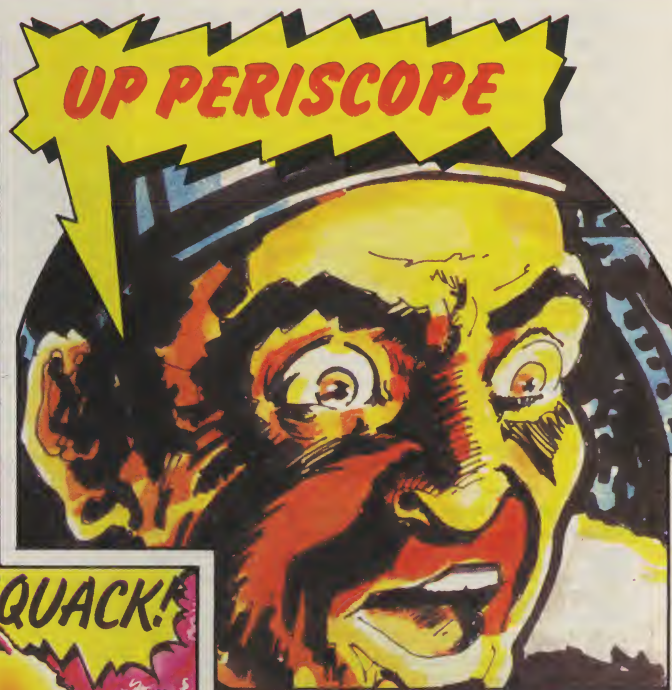
BASIC/GRAPHICS/SOUND

For the most part, the 6502 processor based machine uses what seems to be fairly standard Microsoft Basic. There are only a few extensions. IF THEN ELSE is included, REPEAT UNTIL and DEF FN may be used for numerical defined functions.

Two additional memory manipulation procedures — also found on the Nascom II — are DEEK and DOKE. DEEK and DOKE are double byte versions of PEEK and POKE which are also available.

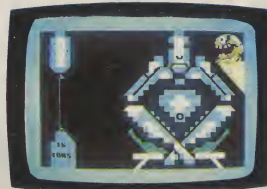
BEYOND

CHALLENGING SOFTWARE



NOBODY'S GETTING THEIR CLAWS ON MY JEWEL!

RUNS ON COMMODORE 64



SONAR contact and the depth charges tumble



Death lurked under every wave

Red Alert Alien Intruder!



...I must keep it out of the main corridors

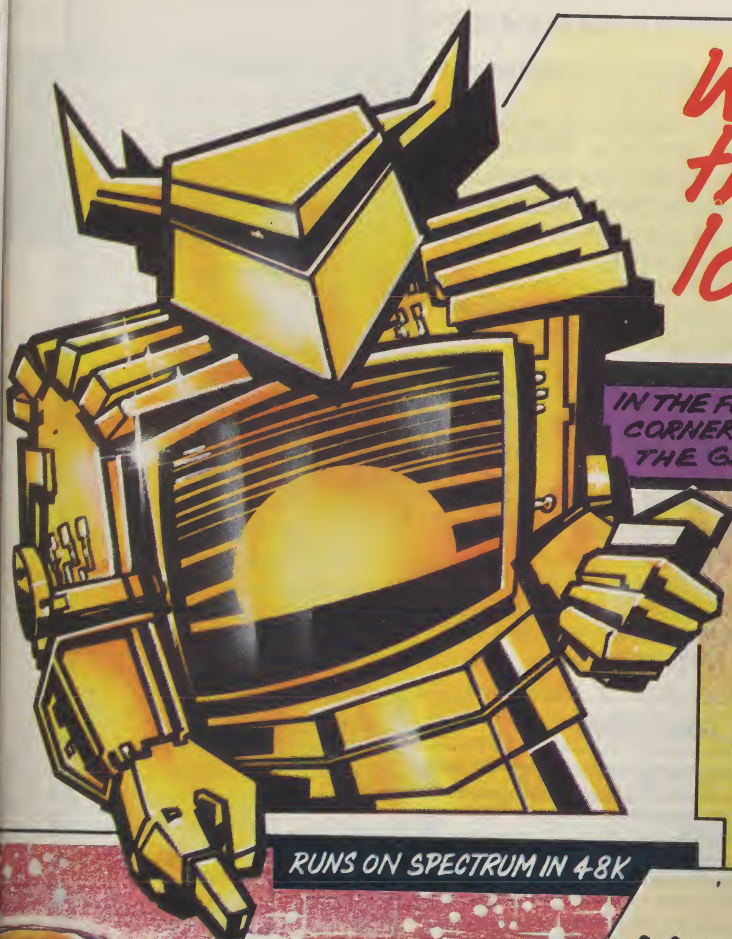


ATARI 400/800 WITH 48K

RUNS ON DRAGON 32

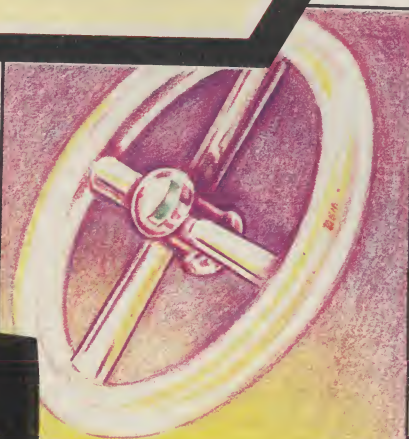


*What's worse
than being
lost in space...*



IN THE FURTHEST
CORNER OF
THE GALAXY

RUNS ON SPECTRUM IN 48K



SPINNING SILENTLY
IN SPACE

... BEING FOUND!



SPACE STATION

Zebra

*and then the
Aliens came*

Kriegspiel on the Dragon

COMING SOON

Kriegspiel

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all prices include p&p

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Post code _____

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Please rush me details of the 'Enter the Beyond' Software Club.

☐

The text display is 39×27 characters with either lower or upper case characters. In TEXT mode it is possible to extend the user RAM by about 7k.

I found it impossible to get an adequate screen display, despite trying two televisions. There is an R.G.B. socket at the back to supply a colour monitor, but that means spending at least another £200! Apparently, later production models had improved R.F. output modulators.

The graphics are fairly fast though are difficult to use. Three modes are provided; LORES 0, LORES 1 and HIRES. In the LORES modes, text, graphics characters and blocks can be PLOTEd on the 39×27 grid. SCRN (X,Y) returns the ASCII value at position X,Y. In HIRES mode you may draw lines from previous plotted points, draw circles, change the way lines are drawn with the PATTERN command or fill in an area of specified number of rows. The hi-resolution is a 240 across by 200 points down with four lines of text at the bottom.

For some reason graphical modes improved the reception. In addition user definable graphics are available.

There is a maximum of eight colours. PAPER is used to set the background colour and INK will set the foreground colour. INK and PAPER may also be used in TEXT mode for coloured characters and background.

Sound is about the only area on the Oric that is good, well not fantastic! There are 6 octaves, 15 volumes, noise and pure tone channels, frequency and six preset envelope shapes. There are 4 preset sound effects which are executed by one word each. These are SHOOT, EXPLODE, PING and ZAP! That should be enough to keep anyone occupied!

KEYBOARD/CURSOR CONTROL/EDITING

There are 57 keys — most with auto repeat — planted on a Spectrum-style keyboard. The keys need a fair bit of pressure to activate them compared to the rather frictionless feel on the Spectrum. Each key produces a click when depressed, which may be turned on or off by CONTROL "F". The keys are a very narrow shape which frequently causes you to miss them. Fast typing is totally out of the question!

The space bar is sensibly placed in the normal position. The keyboard is mounted in an ugly case, though it is robust and sturdy.

Oric's cursor control is so bad it shouldn't be allowed! The procedure is to move the cursor up to the space before the beginning of the line, then press CONTROL "A" to enter the desired part of the line, changing text as necessary or deleting text with the DEL key. There is no facility to insert text or scroll part of the line to close a gap. On the good side TRON and TROFF are used to activate trace on or off.

PERIPHERALS AVAILABLE

When I tried loading and saving programs on our recorder, frequent errors arose. It was very difficult to adjust level settings although

some commercially produced programs were a little easier to load.

The loading and saving procedures are CLOAD 'filename' and Csave 'filename', respectively, where the filename may be up to 17 characters in length. The loading and searching messages are printed at the top of the screen above the text window.

Micro disc drives are expected sometime early next year, and these will be Hitachi 3" size. The expected price is around £200.

Already available is a four colour printer/plotter. It prints either 40 or 80 columns a line at a speed of 12 CPS. It has its own power supply and plugs straight into the Oric. It retails for around £170.

FORTH is available in cassette form which will cost you around £18. Extended Basic and Pascal are being planned.

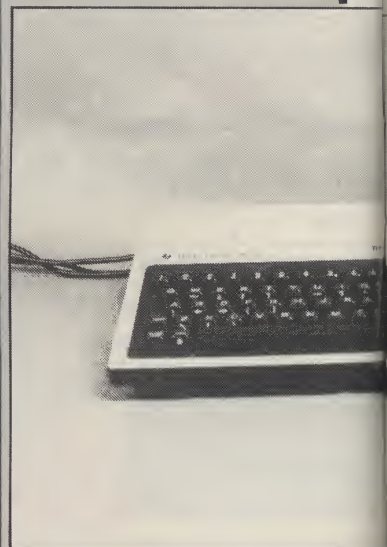
At the back of the machine is a 20 pin printer connector and a 34 pin bus expander, which will probably connect to the micro-drives — when they come!

CONCLUSION

The Oric is the cheapest colour and sound computer around, and as a games machine it offers reasonable facilities. But there is a limited amount of software backing it up — so far. The machine is aimed at beginners — but the manual is badly written, superficial in details and badly in need of an immediate revamp! The keyboard is suitable only for one finger typists. It will be interesting to see what the new extended Basic is like in terms of improving the Oric's capabilities. As mentioned Oric have produced a new ROM which they say has cleared up most of the machine's irritating features. There is growing speculation that the Oric with this new ROM will be produced in a new case — and a completely new name! Oric have not said if the ROM will be sold separately to allow existing owners to update their machines.

TEXAS

RAM : 16K (expandable to 48K)
ROM: 26K (expandable to 62K)
GAME PORTS: 2
KEYBOARD: 48 key (auto repeat), full travel, "Qwerty" layout
SOUND OUTPUT: T.V. speaker
TEXT DISPLAY: 29×24
HI-RESOLUTION: 256×192
SOUND: four channels.
BASIC: Texas Basic (TI-extended Basic is optional)
USER DEFINED
GRAPHICS: yes (8×8 block grid)
COLOURS: 16, transparent, black, medium green, light green, dark blue, light blue, dark red, cyan, medium red, light red, dark yellow, light yellow, dark green, magenta, grey: any one of 16 colours may be used for background or foreground. All may be on the screen at once if necessary.
PRICES AND OPTIONAL EXTRAS
TEXAS TI-99/4A: £100
PERIPHERAL EXPANSION SYSTEM: £90
DISC DRIVE: £170
DISC DRIVE CONTROLLER CARD: £120
80 COLUMN PRINTER: £570
SPEECH SYNTHESISER: £50
RS-232 CARD: £90
32K EXPANSION: £90
JOYSTICK: £25
CASSETTE: £45
CASSETTE CABLE: 10
OTHER AVAILABLE LANGUAGES (cartridge)
TI EXTENDED BASIC: £70
TI LOGO II: £70



99/4a

RESERVED WORDS

TI BASIC

abs, append, asc, atn, base, break, bye, call, chr\$, close, con, continue, cos, data, def, delete, dim, display, edit, eend, else, eof, exp, fixed, for, go, gosub, goto, if, input, int, internal, len, let, list, log, new, next, num, number, old, on, open, option, output, permanent, pos, print, randomize, read, rec, relative, rem, res, resequence, restore, return, rnd, run, save, seg\$, sequential, sgn, sin, sqr, step, stop, str\$, sub, tab, tan, then, to, trace, unbreak, untrace, update, val, variable,

TI EXTENDED BASIC

abs, accept, all, and, append, asc, at, atn, base, beep, break, bye, call, chr\$, close, con, continue, cos, data, def, delete, digit, dim, display, else, end, eof, erase, error, exp, fixed, for, go, gosub, goto, if, image, input, int, internal, len, let, linput, list, log, max, merge, min, new, next, not, num, number, numeric, old, on, open, option, or, output, permanent, pi, pos, print, randomize, read, rec, relative, rem, res, resequence, restore, return, rnd, rpt\$, run, save, seg\$, sequential, sgn, sin, size, sqr, step, stop, str\$, sub, subend, subexit, tab, tan, then, to, trace, ualpha, unbreak, untrace, update, using, val, validate, variable, warning, xor

THE TI-99/4a falls into the same price range as the Oric-1, Spectrum and Vic-20, retailing at around £100.

BASIC/GRAPHICS/SOUND

There are two Basics available. These are the built-in standard TI Basic, and TI Extended Basic.

Both Basics are extremely slow. The Basic is not structured at all, being similar to Microsoft Basic. One very bad feature is the inability to have multiple statement program lines.

Two useful routines built in to the system are auto line number and line renumber procedures.

Although these are easy to use, again they take time to execute. This alone will restrict games programming quite considerably in terms of speed, as graphics animation requires detailed arithmetic calculations.

Even though the hi-resolution is 256 by 192 pixels, it's a pain to use! For a start there are no commands for drawing or plotting. The procedure is to define a character as a line segment in the intended direction, then repeat the character for the necessary length to make up the desired line.

User defined graphics are created on an eight by eight block grid using the CALL CHAR command, which determines which pixels should be set (on) or reset (off). The standard set of characters (ASCII codes 32 to 127) may be redefined, or another 31 characters from ASCII codes 128 to 159 are definable for extra characters.

Single pixels are plotted by defining a character with only one block turned "on", and then printing it in the desired screen location. With the extended Basic module in place, graphics are greatly expanded. The most important addition is the programming of sprites — like the Commodore-64. Sprites can be moved smoothly around the screen as necessary. They also may be magnified, have set speeds and vector directions. COINC is used to detect sprite collision which would be essential for use when your games character has been hit by the opponent!!

Sprites are also given a priority factor. A higher priority sprite will eclipse any lower priority sprite, without erasing it. Sprite creation and manipulation are about the only really good graphical points on the Texas.

There are 16 colours available. Two colours may be included in one defined character although all sixteen may be on the screen at any one time.

Each of the sixteen colours are different, not eight flashing like the BBC. The "subprogram" COLOR is used to set a character's background and foreground colour.

Sound is another good area! There are four individual channels which can be set to run separately or synchronised together.

The best part is that program execution may continue while sound is being played. This could be put to good use as a background tune while a game is being played. In addition there are four preset values for "white noise" and four for "periodic noise".

KEYBOARD/CURSOR CONTROL/EDITING

The "qwerty" style keyboard consists of 48 full travel keys, most with auto repeat. Quite a few features — like quotation marks — are accessible via the function key, and other combinations of CTRL and SHIFT. The general feel of the keyboard is spongy, frequently causing the wrong keys to be hit. This, of course, limits fast and accurate typing. Also the Return key is irritatingly small.

Four cursor direction keys are accessed through the FCTN key.

Although the keyboard is not of good quality, it is very strong, and is mounted in a beautifully designed metallic style case.

PERIPHERALS AVAILABLE

Cassette input is via an Atari joystick type socket, located at the rear. The lead does not come with the machine and costs an extra £10. Texas do make their own cassette recorder which is quite an expensive investment at £45, which comes complete with lead. I used a standard cheap model which loaded and saved each time without any trouble.

A whole feast of peripherals can be linked together. Unfortunately, most of these require their own power supplies.

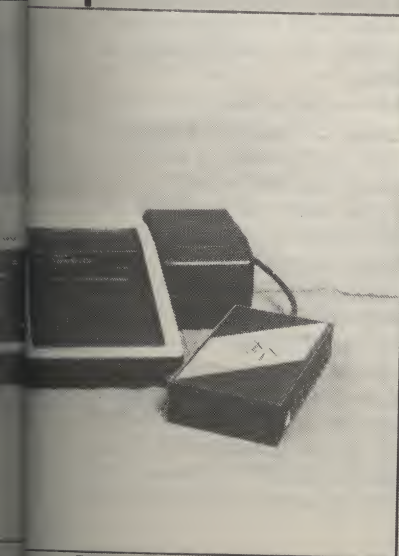
A superb speech synthesiser may be directly plugged into the side on the machine. The realistic voice patterns that it uses are reminiscent of the Texas *Speak and Spell*.

Other peripherals like the disc drives and printer require the "peripheral expansion system", which alone costs £90! The expensive joysticks are of poor quality and retail for around £25.

All additional language modules are also very expensive. These include TI Logo-II and extended Basic which will set you back another £70 each. The power supply and PAL modulator are both external, also rather large and cumbersome.

CONCLUSION

The Texas TI 99/4a was originally very expensive but — as with most micros these days — the price has dropped to around £100 due to the extreme competition. However, even though the machine is cheap the majority of peripherals are expensive. The Basic is extremely slow, the graphics limited and without the Basic module very little in the way of games graphics can be achieved. Software is often hard to come by and it's expensive too.



SINCLAIR SPECTRUM

HARDWARE

PROCESSOR BASED: Z80A (3.5MHz)
RAM: 16K or 48K
ROM: 16K
POWER SUPPLY: external
R.F. OUT: phono socket (channel 36)
GAME PORTS: no
VIDEO OUT: no
EXPANSION PORT: edge connector
KEYBOARD: 40 (auto repeat) keys, limited travel, membrane
SOUND OUTPUT: on board speaker/cassette output
CASSETTE I/O: two 3.5 jack sockets

SOFTWARE

TEXT DISPLAY: 24 lines by 32 characters (eight by eight pixels), upper/lower case.
HI-RESOLUTION: 256 by 192 pixels
SOUND: over ten octaves; pitch and duration may be specified
BASIC: Sinclair Basic
USER DEFINED GRAPHICS: maximum of 21
COLOURS: background, border, foreground may be set from one of eight colours; normal, flash, inverse or bright settings; colours available — black, blue, red, magenta, green, cyan, yellow and white
GRAPHICAL SYMBOLS: 16 preset

PRICES AND OTHER OPTIONAL EXTRAS

SINCLAIR ZX-SPECTRUM (16K): £99 (inc. VAT)
SINCLAIR ZX-SPECTRUM (48K): £129 (inc. VAT)
ZX-MICRODRIVE (100K): £50 (inc. VAT)
ZX-PRINTER (50 CPS): £50 (inc. VAT)
INTERFACE I: £29.95 (when bought with Microdrive)
INTERFACE II: £19.95
MICRONET 800 ADAPTOR: £99.95

Further information from:
Sinclair Research Ltd
Stanhope Road,
Camberley,
Surrey.
Tel. 0276 685311

There's no doubt that the Sinclair Spectrum is a winner. Sinclair's basic aims have always been to provide comprehensive and powerful systems at a fraction of the price of their competitors. One other breakthrough that the Spectrum — and its predecessors — has achieved is highly integrated circuitry, which drastically reduces the number of chips needed without sacrificing computer power. And it's the top games playing machine of the moment.

BASIC/GRAPHICS/SOUND

Sinclair Basic is powerful, extremely easy to learn — but very slow.

The Spectrum will space out program lines very neatly, an important factor for those users who need a clear and concise listing.

Variable names can't contain characters "*" and "-", although quotation marks can be included with the format A\$ = "Hello" "Uncle" "Sinclair"! MID\$, LEFT\$ and RIGHT\$ are not used. Instead a general string slicing procedure is applied with the expression A\$(f to l), where f and l represent the first and last character numbers of the slice.

Error detection is immediate on attempting to input a line, resulting in an error cursor showing the appropriate position. This should be especially helpful to the novice programmer as it will cut down error correction on program execution.

A comprehensive set of functions exists, including the usual comparisons and mathematical operations which are all easy to use.

The text display holds only 32 characters by 24 lines making the potential for word processing extremely limited.

However, software is available to give 64 characters per line.

If desired, text may be inverted to produce a white on black effect, as well as being individually coloured. On the good side, the reception on the whole is clear and distortion-free.

LOAD"filename" and SAVE"filename" are for loading or saving a Basic program. Arrays may be loaded or saved with LOAD"filename", DATA () and SAVE"filename", DATA (). SAVE(or LOAD) followed by "filename" SCREEN\$ will save or load the screen memory.

This is useful if you have created a detailed picture, which takes a matter of seconds to load as opposed to the long winded procedure of redrawing it from within the program.

MERGE is used to merge a file from tape with the existing program in memory, overwriting line numbers and variables that already exist in the old program. However MERGE cannot be used with arrays, or specified "byte" files.

The graphics are a pleasure to use! The resolution is quite adequate for the power and cost of the machine, giving a 176 × 256 pixel display. PLOT x,y will plot a single pixel, and POINT will report if a particular pixel is set or not.

The DRAW statement may have up to three parameters: and a, where x,y are the finishing coordinates and "a" determines the positive or negative drift of the line.

Before DRAW is executive, PLOT must specify the starting co-ordinate, otherwise it will be assumed as 0,0. For example, if you want to draw an arc, say a quarter of a circle starting at position 100,100, the procedure would be PLOT x1,y1: DRAW x2,y2, PI*0.5, where x1,y1 and x2,y2 are the starting and finishing co-ordinates, respectively. x2,y2 also determines the size of the arc (PI*0.5 is taken as 0.5π radians).

DRAW x,y, where no third argument is implied with draw a straight line.

CIRCLE inevitably draws circles! Its syntax is CIRCLE x,y,r, where x,y represent the centre's location, and r is the radius.

User defined graphics are easily created using the BIN statement, and are designed on



print the words "on blue" on a blue background, but will leave the PAPER variable unchanged for text outside the PRINT statement.

OVER can also be used to "overprint" (merge with) existing characters. This could be put to good use for adding accents over letters and so on.

There is, unfortunately, no FILL command.

The colour grid is divided up into 32 columns by 24 rows (like the text screen). The snag is that each colour block contains the normal eight by eight pixel formation, and can an eight by eight block grid, with a maximum of 21 user definitions.

Each BIN statement takes care of one line on the grid, so eight consecutive statements are required. It is then simply a matter of poking the character into the memory.

The Spectrum has eight different colours altogether. PAPER is used to colour the background, INK (logical names, aren't they?) is used to colour foreground and BORDER to colour the screen border. All of these may use one of eight available colours.

IF FLASH is set, characters will flash between their respective and inverse colours.

Characters may also be set to normal or BRIGHT levels. It is also possible to interact these commands with PRINT statements e.g. PRINT PAPER 6; "on blue", which will only

All notes above middle "c" are positive, and notes below are negative. Incrementing or decrementing the pitch will result in a semi-tone raise or drop, respectively. There is no facility to create envelope shapes unless contain only one colour.

Therefore when you change the colour on a pixel, all different colours within that eight by eight grid block change to the colour you're using.

This of course means that you cannot have two different coloured adjacent pixels unless they lie either side of a block boundary. Despite this, some interesting effects have been created with multi-coloured lines!!

Sound generation techniques are very basic. BEEP is used to create a note. Duration and pitch values may be whole or fractional. machine code subroutines are applied.

The tiny built in speaker produces a distorted feeble tone, which quiet folks will regard as a blessing.

There's not much more to say about sound generation except that it is rather weak compared to other micros in the same price range such as the Vic-20 or Oric-1

KEYBOARD/CURSOR CONTROL AND EDITING FACILITIES

The keyboard is awful! There are 40 rubber keys altogether with auto-repeat, fixed to a membrane keyboard. The feel is totally frictionless, resembling calculator buttons rather than keys.

All reserved words are entered by "one key entry". This means that all statements, functions, commands, procedures and most characters are labelled — on or by the appropriate key — in different colours, depending on their function. Some keys have 6 functions!

Even the eight colours are labelled (in their respective colours) along the top! This type of keyword input was introduced on Sinclair's first computer, the ZX80 and has been followed through on consecutive machines ever since.

I found myself scanning the keyboard, scrutinising each key and all its labels each time I wanted to enter a keyword!

Despite this, many seasoned Spectrum users tell me that after a while you can memorise where all the keywords are — and the respective shift keys for obtaining them — and get quite quick at typing them in.

Program line editing is straightforward. There are four keys used to move the cursor up, down, left and right. Each time you enter a line, it is automatically displayed at the top of the screen in its correct line position.

A separate editing cursor points to the most recent line typed-in and this may be moved with the direction keys to point to any other line. Once the cursor is positioned on the desired line for editing, one must press the EDIT key — which will display that line separately near the bottom of the screen — then move the cursor to the desired position.

DELETE will delete characters to the left of the cursor. ENTER may be pressed and the line will take its place in the listing at the top.

PERIPHERALS AVAILABLE

Cassette input is via two 3.5mm jacks, though there is no remote facility for computer control. As data is being loaded into the computer the screen displays a series of moving horizontal lines within the border.

One of the most important add-ons this year for the Spectrum is the microdrives. These can hold up to 100k bytes per mini-floppy tape, with a transfer rate of 16k per second. Up to eight microdrives can be connected to a Spectrum, giving you 800K accessible storage.

The best part is that they're only £50 each (compare that to the price of an average 5" drive!). A Sinclair thermal printer is also available. These retail for around £40 and print at 50 CPS with 32 CPL.

One command will produce an exact copy of what's on the screen, to the printer! "Interface II" allows you to connect two joysticks plus ROM program cartridges that simply plug in.

Another powerful add-on for the Spectrum is the Micronet-800 modem. This will allow you to download software straight into the Spectrum via the telephone lines, and also give you access to Prestel's ¼ million pages!

CONCLUSION

What can you say about the Spectrum? For a micro priced at under £100 with 16k and under £130 with 48k, with hi-res colour graphics and sound it offers unbeatable value for money.

The machine is backed up by the largest amount of games software available for any current machine and the vast majority of it is of a high quality and modestly priced. However, the keyboard is not so hot and the Spectrum's sound capabilities are limited. Its slow Basic is not suitable for the programmer

who wants to create more intricate games without using machine code. Having said that the Spectrum offers a wide scope for machine code applications. Finally, it's the micro that every other manufacturer wishes they had produced!

NICK AND DAVE CHIPS WITH SOME ENTERPRISE!

Well, just who are Nick and Dave? Chips, that's who — or rather, what. Nick handles graphics and Dave the sound in the much publicised Elan Enterprise micro — officially launched in October.

But now for the bad news. You won't be able to buy one until next April. Elan will be attempting to persuade you not to buy another computer before their new micro comes on the market with a £2 million television advertising campaign.

The Elan will sell at around £200 and will have a basic 64k memory, a Qwerty style keyboard and a novel addition of a built-in joystick for playing games — or manipulating text.

Elan Enterprise marketing manager Mike Shirley says that the company will be making 150,000 computers a year and is aiming for a 10 per cent share of the British micro market. He added that Elan wanted to produce a machine better than the BBC and sell it at half the price.

If you want to you can join the Elan users club even before you've laid a finger on the keyboard of one of these mysterious machines. The club promises newsletters and special offers for potential Elan users.

As for the rest of us, we'll just have to wait until the Spring before we can find out just what Nick and Dave can do.

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ORIC-1

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STOP PRESS —
Watch for 2 new CBM 64 titles
Super Pipeline and
Jammin'.

SCREEN GEMS

The *Computer and Video Games* review team has been hard at work throughout 1983 bringing you news of all the top games for all the popular computers. On this page we take a look back at games we have tested during the past 12 months and pick our favourites. So once you've chosen your micro — using our Gamers Guide of course — you'll be able to select games software to go with it!

SPECTRUM TOP TEN

JET PAC Fly around the planet gathering pieces of space craft. When assembled and fuelled blast off to another planet. Ultimate £5.50
MANIC MINER Miner Willy has to climb twenty screens of obstacles to win his prize. Bug Byte £5.95
ARCADIA Several waves of aliens queuing up to attack your ship. Imagine £5.50
THE HOBBIT Graphics and text adventure based on Tolkien's world famous book. Melbourne House £14.95.
JUMPING JACK Hop your little man up through a precarious series of moving platforms to find out the mystery poem. Imagine £5.50
PENETRATOR Scramble type game — fly your ship through tunnels and city skylines — bombing and shooting the radar bases and fuel dumps. Melbourne House £6.95
FLIGHT SIMULATION Take off, fly, and land an aircraft with authentic flight controls. Psion £7.95
TRANZ AM Shades of Mad Max as you drive through America searching for fuel and the seven gold cups of Ultimate. Ultimate £5.50
SCRABBLE Play the classic board game on this superb computer version. Psion £14.95
SPLAT! Help Zippy survive the rocks and spikes and make sure he eats enough grass to keep his strength up. Incentive £5.50.

ATARI TOP TEN

DONKEY KONG Carpenter Mario duels with the gorilla yet again, in a bid to save the kidnapped girl. Atari £29.95.
QIX Trap the roaming spark in a force field, simple to understand but very difficult to master. Atari £29.95.
MINER 2049'er Help "Bounty Bob" explore the gold mine and claim it for himself. Danger lurks in every mine shaft from uranium mutated creatures. Calisto £29.95.
DEFENDER Landers, mutants, pods and baiters they're all there no compromises have been made in this superb all action game. Atari £29.95.
S.S. ACHILLES You must abandon your damaged space ship in the escape shuttle, but you must collect the supplies littered around the ship before it's destroyed. Beyond £14.95 (disc).
ZAXXON A three dimensional defender type game. Battle through the defence forces to reach the robot. Coleco £29.95.
POLE POSITION You've got to keep a steady hand on the wheel even to qualify to race against Atari's top ten drivers. Atari £29.95.
CENTIPEDE A copy of the arcade game where your job is to make sure the garden is free of all those nasty pests. Atari £29.95.
MINED OUT Cross the treacherous minefield saving damsels in distress as you go. Quicksilver £6.95.
GALAXIANS Protect your laser base from the swarms of diving bird men. Atari £29.95.

BBC TOP TEN

PLANETOIDS Brilliant version of the arcade game defender. Without doubt the finest shoot-em-up available on any micro. Acornsoft £9.95.
KILLER GORILLA Help Mario climb the Empire State Building and rescue the girl from the monkey's evil clutches. Program Power £6.95.
SPACE ADVENTURE Explore a drifting and apparently empty space ship. A graphical adventure with real time action. Virgin £7.95.
ZALAGA A galaxians type game but with much much more action. Squadrons of aliens swoop past and dive bomb your laser base. Will test even the most experienced vidkids to their limit. Aardvark £6.90.
PHILOSOPHER'S QUEST Classic Dungeons and Dragons adventure cleverly written with lots of twists in the plot. Acornsoft £9.95
PAINTER A simple but very addictive game. Travel round the maze filling the squares with colour while avoiding the pursuing monsters. A&F £8.00
SNAPPER Of all the Pac-man clones available for the BBC this version comes closest it's hard to believe that it's not the real machine. Acornsoft £9.95.
HOBBIT Text only adventure based on Tolkien's world famous book. Melbourne House £14.95.
STARSHIP COMMAND Save the galaxy from the evil clingons and become the Federation's top Starfleet Commander. Acornsoft £9.95

COMMODORE 64 TOP TEN

HOVER BOVVER An original game involving mowing lawns, but watch out for the flower beds and your erratic dog Rover. Llamasoft.
STIX Trap the roaming spark in your force field. Looks a simple game but becomes really challenging. Supersoft.
THE HOBBIT Graphics and text adventure based on Tolkien's world famous book. Melbourne House £14.95.
ATTACK OF THE MUTANT CAMELS Destroy an army of laser spitting mutated camels with your flying laser cannon. Llamasoft
SKRAMBLE Earth has been taken over by an alien being. His defences are formidable rockets, fireballs, meteors and dangerous tunnels have to be defeated before you get a chance to destroy him. Anirog.

VIC 20 TOP FIVE

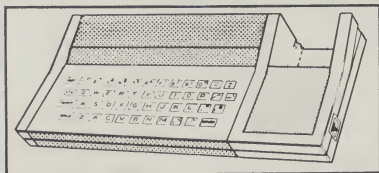
CHOPLIFTER Rescue the hostages and fly them safely back to base. Great flight graphics as the chopper banks and dives in this action packed cartridge from Audiogenic at £24.95
TUTANKHAM The hit arcade game converts splendidly for the Vic. A real winner of a cartridge from Parker Brothers at £29.95
ARCADIA Good standard shoot 'em up with a variety of aliens. Imagine £5.50
OMEGA RACE A most accurate conversion of a little known — though incredibly addictive arcade game. Commodore's best cartridge at £9.99
SKY HAWK A hybrid of Defender and Scramble with exceptionally good graphics. Quicksilver £5.95

TEXAS INSTRUMENTS TOP FIVE

PARSEC Superb scrolling shoot 'em up with speech synthesis. TI's best game at £29.95
ALPINER The best talking game for any computer. Mountain climbing game with a few surprises £24.95
SOCCER The TI plays an excellent game of football with this first division cartridge £14.95
MUNCH MAN TI's answer to PacMan. If you must have a gobbling game for your micro then this is it. £29.95
CHISHOLM TRAIL All action grid style shoot 'em up. This one will really test your reflexes. £19.95

HOME COMPUTERS

20K AQUARIUS



AQUARIUS: The brand new Aquarius Personal Computer is part of Mattel Electronics latest developments in advanced technology and offers full home computing facilities, as well as extensive game play, using a very wide range of plug in cartridges. Since Aquarius is a Mattel Electronics product, it benefits by the company's wide experience of producing high technology equipment, as well as their game programming expertise which is evident from the advanced games which have been produced for the Intellivision. Aquarius costs £49 and comes with microsoft basic built in. It is so simple to use that you'll be writing your first programs within minutes of taking the machine out of its box. You can even record the programs on your own cassette recorder at home, so you can use them again at a later date. Most available domestic tape recorders are compatible with the Aquarius.

A POWERFUL MACHINE: For all its simplicity, it is also very sophisticated. It has a 280A processor and it comes with 8K of built in ROM and 4K of RAM, expandable to 52K. It has a display of 40x24 characters, and a graphic resolution of 320x192 with a total character set of 256 (including the complete ASCII set with upper and lower case letters, numbers and additional graphic symbols). The keyboard has 49 full stroke moving keys, unlike some of the cheaper machines which have membrane keyboards. The size of the machine (excluding any of the additional peripherals), is 13"x6"x2".

PERIPHERALS: It is very easy to increase the capabilities of your Aquarius as all the peripherals plug straight into one another. You can add a Printer, a Modem, a Data Recorder, Mini Expander and other items. All of the peripherals are very easy to install and what is more, they're easy to use. But the best news of all is, they're easy to afford.

CPM OPERATING CAPABILITY: The Aquarius is capable of being expanded to 52K RAM and later in 1983 a disk drive will be available for it, with the commercial CPM business operating system. This will allow you access to one of the largest software libraries in the world, with literally hundreds of programs available for you to use.

CARTRIDGES: Various sophisticated programs have been launched on plug in cartridges such as a Visicalc spreadsheet and a word processor. Other cartridges include popular Intellivision titles and are available for as little as £12.95.

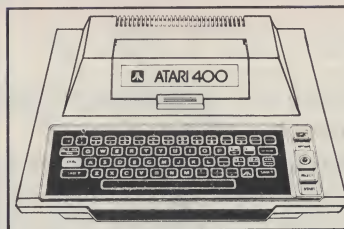
4K Mattel AQUARIUS — £42.61 + VAT = £49
20K Mattel AQUARIUS — £67.83 + VAT = £78 **£49**

ATARI 400/800

NEW LOW PRICES

ATARI 400/800: With the Atari Personal Computers, you can play the ultimate in T.V. games, teach yourself new subjects or skills, balance budgets, and even write your own computer programs in Basic.

SPECIFICATIONS: Both the Atari 400 and 800 can display in up to 16 colours, each with 16 intensities. They have four independent sound synthesizers for music tunes/game sounds, giving four octaves with variable volume and tone control on your T.V.'s speaker. The display graphics



are of amazing quality, having a detailed resolution of 320 x 192, comprising 24 lines of 40 characters. Atari personal computers have a standard 10K ROM operating system. In addition to this the standard Atari 400 (£99) comes with 16K of RAM and the expanded version with 48K (£158). The Atari 800 (£249) comes with 48K as standard. Both the 400 and 800 are now supplied with a FREE £40 Basic Programming Kit, which includes the Basic Programming Cartridge, as well as a 120 page Basic Reference Manual and the 184 page Self Teaching Manual by Bill Carris called 'Inside Atari Basic', so you can begin programming straight away, without buying any 'extras'. Even a mains plug is supplied!

OVER 500 PROGRAMS AVAILABLE: The Atari computers are supported by well over 500 programs available for your use, a larger selection than you will find on any other television game or home computer! The wide selection puts Atari way ahead of the competition. Just fill in the coupon and we will be pleased to send you a full price list which gives details of our range of software available for entertainment, home education, programming and home office use. We think you'll agree when we say it's quite impressive.

100 FREE PROGRAMS FROM SILICA SHOP: If you buy your Atari 800 from Silica Shop, you will receive a FREE presentation pack of 6 cassettes containing 100 programs, including games, utilities and demonstrations. Unfortunately, because of the low price at which we are offering the Atari 400, we are unable to give the programs with both machines. However, as a special offer, we are selling the programs to purchasers of the Atari 400 for only £14.95, less than half of the recommended retail price of £30. Silica Shop offer a TWO YEAR GUARANTEE on both Atari 400 and 800 home computers.

ATARI 400 With 16K — £86.08 + VAT = £99
ATARI 400 With 48K — £137.39 + VAT = £158
ATARI 800 With 48K — £216.52 + VAT = £249 **£99**

COLECOVISION



THE SYSTEM: The CBS Colecovision offers new standards in video game play. The excellent graphics are well implemented with arcade titles such as Zaxxon, Lady Bug, Gorf, Wizard of Wor, Carnival, Mouse Trap and the lovable Smurfs. The console comes supplied with a three screen arcade quality version of DONKEY KONG. Parker and other companies have also announced ranges of cartridges for Colecovision, to further enhance the wide range of quality titles available for this new television games machine.

THE CONSOLE: The CBS Colecovision video games system has advanced technology which produces superlative graphics resolution and excellent sound effects. The styling of the console and hand controllers has been carefully researched; the console is designed to complement modern hi-tech equipment, and has clear features for easy operation. The hand controllers allow fingertip control via the 8 direction joystick, and feature 2 independent fire buttons. The push button keyboard is used for game selection and for game control with some cartridges. The hand controllers are detachable and are connected to six feet of telephone coil cable, storing neatly away in the console when not in use.

ATARI EXPANSION MODULE: The Atari converter module allows Atari VCS software cartridges to be played on the Colecovision console, allowing owners the freedom to purchase from the extensive range of Atari compatible cartridges. It also means that existing Atari owners can buy the CBS Colecovision games system without discarding their software library. Silica Shop offer part exchange facilities if you wish to upgrade.

TURBO EXPANSION MODULE: The Turbo Driver Expansion Module allows you to actually drive the vehicle that appears on your T.V. screen. The module consists of a steering wheel, dashboard and accelerator pedal. One hand controller is mounted on the dashboard to provide a gear change unit. The module comes complete with a Turbo Driver cartridge, the first of several cartridges to make use of the module, which provides all the action of sitting in the driving seat. This facility is unique to CBS Colecovision.

HOME COMPUTER EXPANSION MODULE: The Home Computer Module scheduled for late 1983, allows conversion of the games unit into a sophisticated Home Computer. This flexibility of design is an important feature of the CBS Colecovision System.

COLECOVISION - £127.82 + VAT = £147 **£147**

VECTREX



THE SYSTEM: Vectrex is a totally unique Home Arcade System, which has been exclusively designed and engineered to duplicate real arcade game play. Complete with its own monitor display, Vectrex won't cause any arguments over the use of the family's television because it has its own built in screen.

THE SCREEN: Vectrex does not use ordinary display techniques, instead it uses vector scanning to control the images on the screen. With this scanning method, the gun only updates the area of the screen that has changed, whereas a normal T.V. re-transmits the ENTIRE screen 50 times a minute. It is this that gives Vectrex its speed, and means that very little computer power is required for screen control, and the results provide very fast responding and clear images. These 'Vector Graphics' are used in several arcade games such as Asteroids and Battlezone, to give you incredibly high resolution and quality. Vectrex brings all of this from the arcade right into your living room. The Vectrex screen is capable of displaying 80 columns by 40 lines, which is significant to the extensive developments planned for the system.

EXCITING SOUNDS AND ELECTRONICS: Vectrex has an advanced microprocessor with more speed and power and exciting effects than many home video games systems.

REAL ARCADE CONTROLS: Vectrex has a unique control panel, similar to those used in many real arcade games, with 4 concave action buttons and a full 360° self centering joystick. This control panel has a 4 foot detachable cord for maximum player freedom.

REAL ARCADE GRAPHICS: Vectrex has its own 9 inch vertical screen and unlike a conventional T.V. screen, uses advanced display technology to achieve brilliant, high resolution imagery and superb game play never before possible. The Vectrex display provides special effects too, such as 3-D rotation and zooming in and out, which a regular T.V. cannot match. Using a black and white monitor, each Vectrex game comes supplied with its own coloured plastic screen overlay to add to the excitement of game play. The range of Vectrex cartridges (£19.95 each), gives a good selection of arcade games such as Berzerk, Scramble, Rip-Off and Bomber Attack. Vectrex comes complete with a fast paced 'Minestorm' game built into memory.

VECTREX: Vectrex has an advanced state-of-the-art microprocessor with more speed than other T.V. games.

VECTREX — £112.17 + VAT = £129.00 **£129**

WHO ARE SILICA SHOP?

Silica Shop are one of the leading specialist suppliers of Video Games & Personal Computers. We consider that our service, to those who already own or to those who are interested in any products in our range, cannot be matched by any other supplier. Just look at what we have to offer:

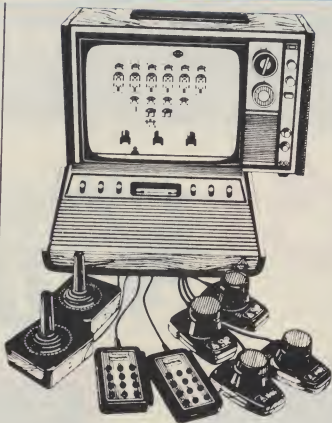
- * **SHOP DEMONSTRATION FACILITIES** — we provide full demonstration facilities at our shop in Sidcup, so that you can get hands on experience of our range.
- * **SHOP OPENING HOURS** — we are open from Monday to Saturday 9 am - 5.30 pm, but close at 1 pm on Thursday's and 8 pm on Friday's.
- * **MAIL ORDER** — we are a specialist mail order company and are able to supply goods direct to your door at no extra cost.
- * **FREE FIRST CLASS DELIVERY** — all orders are sent Post and Packing FREE, most of them being despatched by FIRST CLASS POST within 24 hours of us receiving your order details.
- * **MONEY BACK UNDERTAKING** — if you require overnight delivery, this can be arranged at a charge of £3 for items under £50, or alternatively £5 for items over £50.
- * **EXCHANGE** — we will offer you up to one third of our current selling price in part exchange on your old Mattel Intellivision or Atari console (and related cartridges), if you decide to buy a new video game or personal computer from us.
- * **SECONDHAND GOODS** — we sell secondhand Mattel & Atari consoles/cartridges (with a full 1 year guarantee, at two thirds of our normal retail price).
- * **COMPETITIVE PRICES** — both our prices and service are very competitive. We are never knowingly undersold and will normally match any bona fide price quoted by our competitors, providing they actually have the goods in stock. We will also send the order to you post and packing free!
- * **HELPFUL ADVICE** — our specialist sales staff are always available to give you advice on the suitability of various computers or T.V. games.
- * **SERVICE/REPAIRS** — are available on all machines in our range, often utilising our in house service facilities. We will support your machine long after you buy it.
- * **ATARI SERVICE CENTRE** — we are now an authorised Atari service centre and can therefore accept repairs on all Atari equipment (TV Games and Computers) even if you did not originally purchase it from Silica Shop. All repairs during the manufacturers 1st year warranty period will be completed FREE OF CHARGE.
- * **2 YEAR GUARANTEE** — we offer a 1 year extension on most manufacturers 12 month guarantee, including Atari Personal Computers.
- * **VIDEO GAMES AND COMPUTER CLUBS** — we offer a full information service on all video games and computers in our range. Advanced information on many new developments is often included, so you are always kept informed. We now issue regular newsletters on software releases to make sure that you join our club.
- * **OVERSEAS ORDERS** — we regularly send goods overseas and use various dispatch services. Please let us know your requirements and we will give you a quotation.
- * **PAYMENT** — we accept Access/Bankcard/VISA/American Express/Diners Club credit cards, as well as cash, cheques, postal orders, CDD or Post Office Transcash.
- * **CREDIT FACILITIES** — we also offer credit facilities with varying payment over 12, 24 or 36 months. Please send for our FREE literature and a written quotation.

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VIDEO GAMES

ATARI



ATARI VCS (2600) - THE NO 1 BRAND LEADER IN THE U.K.

ATARI: The Atari Video Computer System known as the Atari VCS or the 2600 has now become the T.V. game brand leader. In the U.K. there are over 700,000 owners of the VCS with access to a range of over 200 different plug in cartridges, each having a multitude of different variations and difficulty levels. Every system comes complete with the main console, two individual joystick controllers, a pair of paddle controllers, aerial splitter, mains adaptor, a 27 game Combat cartridge and a **FREE PAC-MAN** cartridge, which is worth £29.95. The console also incorporates several circuits designed to protect your T.V.

SECONDHAND GAMES: We currently have several secondhand Atari VCS units in stock which we are selling for only £39 (inc VAT). This price includes the Console, with Combat Cartridge and all the accessories, as well as a 12 month guarantee. We also have stocks of several secondhand cartridges many at half price (all with 12 month guarantee). We will normally buy back secondhand units and cartridges at 1/4 of our normal selling price.

£39

EXTENSIVE CARTRIDGE RANGE: The Atari VCS is so popular that in addition to Atari's own cartridges, there are over 150 compatible cartridges, produced by at least a dozen different third party manufacturers. Silica Shop has one of the largest cartridge selections available in the U.K. Our range of over 200 titles (printed either side of this column), includes items in stock now, as well as many of the new releases for later in 1983.

SILICA ATARI CLUB: Silica Shop has over 20,000 Atari VCS club members registered on our computer. As a specialist company we are able to obtain advance information about new developments and send detailed catalogues to all of our club members, enabling them to evaluate new products before they buy. This is a totally **FREE** service, to receive your copies complete the coupon below.

SERVICE CENTRE: Atari International (UK) Inc has recently appointed Silica Shop as an authorised Atari Service Centre. This means that we can now service your Atari VCS or 400/800 (under guarantee if applicable), whether or not you purchased it from us.

VCS COMPUTER KEYBOARD: A keyboard will soon be launched to convert the VCS into a fully programmable home computer. For further details, join our club by completing the coupon below. We will then let you know when further information is available.

STARPATH SUPERCHARGER: The Supercharger costs only £29 and plugs into the cartridge socket of your VCS and expands its RAM almost 50 fold, from 128 to 6,272 bytes. This increased memory adds vivid high-resolution graphics capabilities and significantly lengthens the game playing time. Supercharger has a range of £17.95 multi-load games offering the facility to play a game in several distinct parts (great for adventures), the next section being loaded only when you have completed the previous one. For a detailed Supercharger colour catalogue please complete the coupon below.

ATARI VCS CONSOLE - WITH COMBAT AND PAC-MAN £60 + VAT = £69

£69

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Onk
Pitfall
Plaque Attack
River Raid
Robotank
Seaquest
Skiing
Sky Jinks
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Tennis

APOLLO
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Skeet Shoot
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Space Chase

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Asteroids
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Breakout
Casino
Centipede
Checkers
Chess
Circus
Codebreaker
Combat
Concentration
Defender
Demons/Diams
Dig Dug
Dodge'em
E.T.
Football/soccer
Fun with Nods
Gallaxian
Golf
Gravitar
Hangman
Haunted Hse
Human Cann
Hunt & Score
Hunt & Score
Indy 500
Jungle Hunt
Kangaroo
Krull
Math G Prix
Maze Craze
Mini Golf
Missile Cmd
Ms Pac-Man
Night Driver
Olympics
Othello
Outlaw
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Raiders of L/A
Sky Diver
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James Bnd 007
Jedi Arena
Lord of Rings
Popeye
Q-Bert
Reactor
Rtn of Jedi 1
Rtn of Jedi 2
Sky Skipper
Spiderman
Splendor
Super Cobra
Tutankham
Z-Tack

BOMB
Assault
Great Escape
Splendour
Wall Defender
Z-Tack

CBS (Coleco)
Blue Print
Carnival
No Escape
Donkey Kong
Gorf
Mousetrap
Smurf
Turbo
Venture
Wings
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Zaxxon

IMAGIC
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Disaster
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I want my Morn
Pizza Chef
Quest for Gold
Tally Ho
Tanks no Tanks

ACCESSORIES

We stock a wide range of accessories for the Atari VCS and 400/800 personal computers. The same accessories can be used on the Commodore VIC range of computers. The Wico range can also be used with the Texas Instruments computers on purchasing a special adaptor. To give you an idea of the range available, just take a look at the following list:



Trackball by Wico

LE STICK: A mercury filled joystick specially made for one handed operation, with thumb fire button.

QUICK - SHOT: This joystick features a contoured handle grip, thumb trigger and optional base fire button. It is supplied with 4 sure foot suction grips.

STARFIGHTER: Neat and compact with a small direction stick. Metal interior for added strength.

VIDEO COMMAND: With a tapered handle, this joystick is for one handed use. It has a directional control which is similar to a jet fighter joystick.

WICO RED-BALL: An arcade type joystick with a red ball handle, it features 2 fire button locations, one at the base and one on the stick. It comes supplied with 4 grip pads for easier table top use.

WICO STRAIGHT - STICK: The main feature of this joystick is its arcade style, bat handle grip. It also has 2 fire buttons. Four grip pads included for table top use.

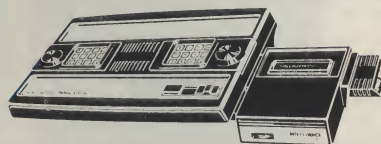
WICO TRACKBALL: A true arcade style trackball for use with your Atari or Commodore VIC. This product is designed to give arcade control in your living room.

12" EXTENSION LEAD: A 12" extension for Atari and Atari compatible joysticks for greater player freedom.



Wico Straight Stick with Stick Fire Button

MATTEL INTELLIVISION



MATTEL INTELLIVISION: The Mattel games unit is a most versatile T.V. game which offers 3-D graphics quality for only £98. Each cartridge comes with 2 overlays which fit over the unique hand controller giving easy directions for game play. Using the handset's control disc, objects

can be manoeuvred in 16 directions to give an accurate simulation of lifelike movement. From 1st September 1983, the Mattel Intellivision T.V. Games Console will come with a voucher which entitles you to claim a **FREE VOICE SYNTHESIS MODULE**, normally priced at £50. This unit creates voices as part of game play on certain cartridges.

NEW MATTEL CARTRIDGE RELEASES: Why not complete the coupon below and join the Silica Mattel Owners Club and receive our **FREE** news bulletins and 16 page catalogues detailing new Mattel releases. There will soon be over ninety cartridges available for the Mattel, and a small selection from these is listed below:

MATTEL: Arctic Squares, Burger Time, Buzz Bombers, Chess, Cloudy Mountain, Loco Motion, Mission X, Mystic Castle, Sharp Shot, Solar Sailor, Space Shuttle, Vectron, Winter Olympics. **ACTIVISION:** Happy Trails, Pitfall, Stampede. **CBS:** Blue Print, Carnival, Donkey Kong, Gorf, Mousetrap, Smurf, Solar Fox, Turbo, Venture, Wizard of Wor, Zaxxon. **IMAGIC:** Beezer, Dracula, Ice Trek, Nova Blast, Safecracker, Swords & Serpents, Tropical Trouble, White Water. **PARKER:** James Bond 007, Lord of the Rings, Popeye, Q-Bert, Spiderman, Star Wars, Super Cobra, Tutankham.

COMPUTER KEYBOARD: In November 1983, Mattel will be launching their new £89, 49-key computer keyboard attachment called "LUCKY" which is fully programmable and has microsoft basic built in. It will transform your Master Component into a home computer. The adaptor also accepts a 6 note polyphonic music synthesiser and full size 49-key piano keyboard that will make learning music as easy as playing games.

MATTEL + VOICE - £85.22 + VAT = £98.00

£98

VIDEO GAME CLUB

In a fast moving market like video games, it is difficult to keep up to date with all the developments that take place. With new programmes and accessories being introduced at a fast rate by several different manufacturers, it is impossible to get all the information you require from one manufacturer alone. It is for this reason, that we have set up owners clubs for the more popular video games and home computers, to keep you fully up to date with what is going on with your particular machine. As far as we know, Silica Shop are the only company to offer such clubs, but that is not surprising since we are the specialists. We currently have **FREE** clubs for the Atari VCS, Atari 400/800 home computers, and Mattel Intellivision. Soon we will have clubs for Colecovision, Aquarius and Vectrex. So if you own one of these machines, fill in the coupon opposite, and we will enrol you **FREE OF CHARGE** in the club relevant to your computer or video game.

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COMMODORE

64

AS SEEN ON
 T.V.!!

KONG

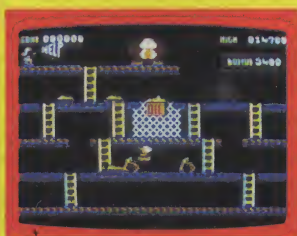
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A 31 K ALL M/C PROGRAM WITH BRILLIANT ANIMATED GRAPHICS



1. CHASING FIREBALLS AND BARRELS, CAN BE SMASHED BY THE Mallet IF YOU CAN JUMP UP AND GET IT.



2. JUMP OVER THE PIES AS YOU RUN ALONG THE CONVEYOR BELT MAKE SURE YOU DONT END UP INSIDE THE COOKER.



3. THE ONLY WAY UP IS BY THE LIFT WHICH IS UNDER A CONSTANT BARRAGE OF GIRDERS.



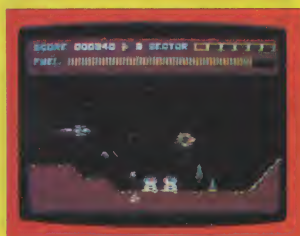
4. KNOCK OUT ALL THE SUPPORTS BY RUNNING OVER THEM AND WITNESS THE SPECTACULAR COLLAPSE OF KONGS LAIR.

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PILOT YOUR SPACE CRAFT THROUGH THE SIX DEFENCE SECTORS AND DESTROY THE COMMAND MODULE OF THE COBRON EMPIRE. A 32 K ALL M/C BLOCKBUSTER.



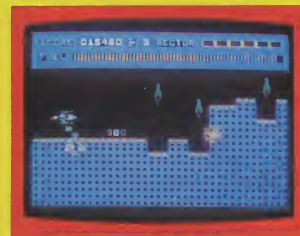
1. RAMMING MISSILES HURTLE TOWARDS YOU.



2. FIGHT COBRON QUASER ION SHIPS.



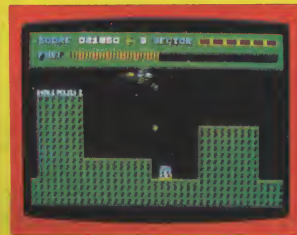
3. DODGE THE FIREBALLS, BECAUSE YOU CAN'T SHOOT THEM DOWN.



4. CITY WITH HIGH RISE BUILDINGS.



5. GUIDE YOUR SHIP WITH DEXTERITY THROUGH THE MAZE.



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THE EVIL WITCH ZOGANAAR HAS FORCED BERT TO PLAY ON HER 3D HEXAGONAL PYRAMID. AS HE JUMPS FROM STEP TO STEP OF THE PYRAMID. MASSIVE RUBBER BALLS BOUNCE DOWN THE PYRAMID TO CRUSH HIM. HER PET SNAKE, COILY, MOVES UP AND DOWN THE PYRAMID CHASING BERT. YOU HAVE TWO SPINNING DISC'S TO JUMP ON TO AND LURE COILY TO HIS DEATH. CAN YOU MAKE BERT THE HEXPERT? A SUPERB ALL M/C GAME WITH EXCELLENT 3D GRAPHICS.



MOON BUGGY

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EXPERIENCE ALL THE THRILLS OF THE ARCADE GAME AS YOUR PATROL CRAFT MANOEUVRES OVER THE GIANT POT HOLES.

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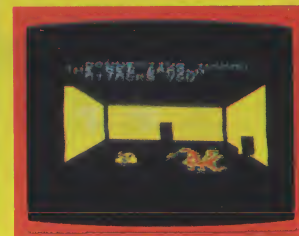
£7.95



A 3D STAR TREK GAME WITH REAL ARCADE ACTION BATTLE WITH THE ALIENS.

K.B. / J.S.

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ENTER THE REALMS OF FANTASY WITH SUPERB USE OF SPRITE GRAPHICS BATTLE WITH THE FEARFUL FIRE BREATHING RED DRAGON

K.B.

£6.95



A POPULAR ARCADE GAME BROUGHT TO LIFE WITH BRILLIANT ANIMATED GRAPHICS

K.B. / J.S.

£5.95

GRAPHICS

By Garry Marshall

MAKE THE MOST OF SPRITELY TEXAS!

Sprite graphics are becoming available on more and more personal computers, including the Texas Instruments TI99/4a, the Commodore 64, the Sord M5 and the Atari computers.

A newcomer to sprite graphics may wonder what all the fuss is about, and can have difficulty in finding out exactly what a sprite is.

The manual for Texas Instruments' Extended Basic, for example, says only

that "sprites are graphics that can be displayed and moved on the screen".

This isn't very helpful. I'll try to explain what sprites are so, armed with this knowledge, you will be able to make full use of them.

A sprite has much in common with a graphics character in that it has its own shape, colours, and can be displayed on the screen.

Although it has other properties than

these, a sprite usually exceeds an ordinary graphics character even in these aspects. The first way that it does this is in its positioning on the display screen.

Whereas a graphics character can be placed only in character positions, a sprite can be placed at any dot position. That is to say, its top left corner can be positioned at any dot on the screen.

Because of this a sprite can move smoothly over the screen, while a graphics character inevitably jerks from position to position when it is moved. Secondly, a sprite can be much larger than a graphics character so that its shape can be designed in much more detail.

On the TI99/4a, for example, a sprite can be the same size as four graphics characters, and on the Commodore 64, where characters have an 8x8 dot matrix, sprites occupy a grid of 24x21 dots.

What makes sprite graphics really exciting and different from ordinary graphics, however, is that a sprite can be given a speed and a direction in which to move with a single instruction.

Once this instruction is issued, the sprite is automatically kept in motion in the specified direction and at the given speed without the need for any further action on the part of the programmer.

WHEN SPRITES MEET

This is invaluable in programming a wide range of games. As well as this, with sprite graphics a three-dimensional effect can be achieved with some ease because a sprite can be assigned a level of importance.

When two sprites meet each other the more important one passes over the other so that it can always be seen on the screen while the less important one is obscured.

So, in a game where a spaceship is flying past a planet, if the sprite for the spaceship is more important than that for the planet, the spaceship will appear to pass in front of the planet whenever they meet.

Sprite graphics systems provide the means for manipulating sprites in many ways. To give just one example, they can usually detect automatically when two sprites meet each other.

On the TI99/4a this is done with the CALL COINC sub-program and on the Commodore 64 by examining memory location 53278, although when using Simon's Basic on the 64 a DETECT command is provided for this purpose.

Next issue I'll be bringing you more information about the graphic capabilities of your computer.

NOW, READ ALL ABOUT IT!

Books on video games for micros are now very common. Usually they consist of program listings for a particular machine, and they may or may not include reasonable explanations of how the programs work.

Good examples of this kind of book are the *Commodore 64 Games Book* by Clifford and Mark Ramshaw (Melbourne House) and *The Spectrum Book of Games* by M. James, S. M. Gee and K. Ewbank (Granada).

You can learn a lot about programming in Basic by typing into your computer the programs in books of this kind, as well as having the fun of playing the games. And if you don't want to be bothered with the typing, many of the books have an associated cassette containing the games programs which you can purchase.

However, I've been looking at a volume on games and graphics that is quite different from the usual books, and which is an exciting source of many and varied ideas. The book is *Pascal Programs for Games and Graphics* by Tom Swain, (Hayden Book Co.), price £15.95.

First, don't worry that the games are written in Pascal rather than Basic, for this is an advantage, or can be turned to advantage, in several ways. The use of Pascal means that it is very easy to see how the games are written.

In fact, once you have digested the formalities of Pascal, which needn't take very long, the Pascal programs can be regarded as precise descriptions of games. This opens the possibility of converting them to Basic, perhaps after amending them to suit yourself, which is surely more fun, and more instructive, than simply typing listings.

The games in the book have names like Lasergraph, Moonport and Light Bikes which indicate rather well what they are about. In fact, the games are a decided improvement on what is usually found in the books of Basic listings.

The graphics are also impressive, and enhance without fail the games in which they appear. They are written for the Apple II and Ie computers, but can readily be adapted to any other computer with a similar graphics capability.

The book also gives listings for a graphics editor with which graphics can be designed and then saved.

Once a graphics display is saved it can also be manipulated and printed out or, if you are lucky enough to have a plotter, it can be plotted.

This capability for handling graphics is invaluable to any programmer who uses graphics a great deal. While it will not be particularly easy to adapt the suite of programs for the graphics editor to Basic, the attempt will be very rewarding, and the Pascal programs do show very clearly how it can be done.

All in all, *Pascal Programs for Games and Graphics* is a highly stimulating book full of ideas for games and graphics. As an extra bonus, if you have ever wondered what Pascal is all about, or if you have wanted enlightenment about structured programming, the excellent programs in this book can throw a good deal of light on both matters.

Finally, two books have appeared recently that contain numerous illustrations showing what is possible with state of the art computer graphics. They are *The Computer Image* by various authors (Addison-Wesley) and *Computer Images-State of the Art* by Joseph Deken (Thames and Hudson). They contain examples of images from areas such as computer art, modelling, simulation, computer-aided design, computer-aided manufacture, mapping and even choreography — done on an Apple, incidentally.

Although both are more than picture books, their illustrations show the incredible computer-generated images that can now be produced in the wide range of areas where computer graphics is used.

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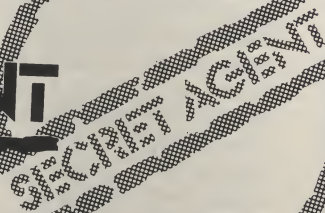
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CHRISTMAS CRACKER!

"What are you thinking of doing for the Christmas issue?" asked Tim, our production editor, always eager to tick off unfilled pages.

I nearly choked on my coffee. With the August heat making me sticky with perspiration, nothing could have been further from my mind than Christmas. But words have to be written long before the magazine reaches the news-stands, so I shut my eyes and thought of snow.

The heat pouring in through the window became a blazing log fire, and the pub lunch settled in me like Turkey and Christmas Pud. I pictured the telly, the

BY KEITH CAMPBELL

Queen just finishing and the obligatory Christmas circus about to start. Circuses! Ghost stories! Eureka! My Christmas review!!

I so startled the office that Linda pasted a title upside down, and Clare stopped dead in the middle of a Rebecca Corwell letter... Your car out of petrol miles from anywhere, empty can in hand, you cross the fields in the gathering dusk.

Suddenly you come across an unnerving site — a big-top complete with all the usual trappings — a generator, maintenance wagon, and animals. Entering the tent you find the ring, where

all is deserted. But wait! Is that a clown running off into the shadows?

What to do now? To pass the time, here's a chance to become a circus artiste. Tame the cats, try your skill on the trapeze, and maybe walk a tight-rope! I found I made a rather nasty mess on the canvas when shot from the cannon, but my tightrope walking is coming on a treat! I no longer get killed when I fall off!

What's the point of it all? To discover that, you will have to play *Circus* for quite some time, and to reach your goal, even longer!

Circus is one of Brian Howarth's *Mysterious Adventures*, and did, on occasions, send a cold shiver down my

MADNESS MINOTAURS AND A PHILOSOPHER

Help is at hand for David and Jean Symonds, thanks to two players of *Madness and Minotaurs*. Mushrooms do come into the game later, but for now — simply find the small lamp on the first level and type "LAMP ON". You can then descend!

"I can understand their agony," writes Robert Moss of Basildon. "The criminal thing is that one single command will change everything."

W. Pooley of Liverpool also sent in this tip, and in return requests help in *Jerusalem Adventure*. Any offers on how to get through the Golden Gate?

Some pleas I receive are quite difficult to satisfy. But I try my best so here goes!

Attention Mrs Oxfey of St Andrews, Fife. I hear that you have taken over your son's *Espionage Island*. Shame on you! Take it from me, it's no use staying up till 2 a.m. trying to kill the native woman. Play the game, or rather, stop playing the game, and let David have a go!

Here's another difficult one. Simon Marsh from New Malden says some very flattering things about the *Adventure* feature, suggesting that I take over the whole magazine! He offers some criticism though — "I notice your pages are coming under attack from Spectrum owners. Please don't let

them take over, like they have in xxxxxx Computing xxxxxx," he implores, "e.g. NO HOBBIT PROBLEMS!!!" Over 100 pages with no mention of Hobbit, Simon? Impossible! It's the most popular game in the world — isn't it?

Can anyone get cheese in *Philosopher's Quest*? Or find David Somekh of Wanstead a shaggy dog after giving a woman a less shaggy one? Come to think of it, has anyone completed *Philosopher's Quest* yet?

Denis Field of St Albans can't escape the *Castle of Riddles* courtyard. Directions N, E, and W all lead him to very short-lived excursions. Is it the same for you too?

Dark Crystal is a game seldom mentioned in despatches, so any offer of help for David Johnston and Gareth Dart of Gwent would be much appreciated.

Special hints are printed upside down — but there are other clues hidden, as usual, within the reviews and chit-chat. Those who know the answers will no doubt recognise these. If you are searching for help about a game mentioned here, study my words carefully — even the headlines may help!

Help is also at hand for me, now. Your letters are starting to pile up too

high too fast. I like to ensure each of you gets a reply, so I turned the tables on my most prolific correspondent, and persuaded him to give me a hand.

Welcome to Simon Clarke, whose name you may have seen a few times in the Helpline section. I gain the double advantage of having less replies to write, and no more problems from Simon to worry about!

So if you are stuck, or can help "unstuck" an *Adventurer* in distress, write to me at Keith Campbell's *Adventure Helpline*, *Computer & Video Games*, Durrant House, 8 Herbal Hill, London EC1R 5JB. I shall continue to receive and read all your letters, but will pass some of them over to Simon to answer.

A Happy Christmas to *Adventurers* everywhere. And if yours is a Christmas Pudding stuffed with treasures, don't forget to LOOK and EXAMINE things carefully, before you eat!

HELPFUL HINTS

before trying to lift the curse.
then drop it in the only place possible
new object, (a "paw" clue I'm afraid!)
MOVE something heavy to lead to a
could it hold a clue?
You'll receive a poem as a reward —
megaphone in the echo chamber.
the dead-aid in the oil drum, and the
Use the telescope in the observatory,

NERVOUS BREAKDOWN?

Is Pimania causing brain damage? Paul Smith of Cheam, fell into a dead faint after offering to become a life subscriber to *C&VG* and the complete solution to Adventure B, just to find out how to open the gate. He's lucky because he's obviously playing on a Spectrum.

John Yeates, a self-confessed BEEB Pimaniac from St Clements in Jersey, says only "PI. AAAGH! SPLAT!" And well he might

Some early versions of Pimania contained a bug which makes the game impossible to solve. Only about fifty of these were sent out before Automata spotted the bug and contacted the people who had so far purchased the game. If you suspect you have a bugged copy contact Automata now who will be happy to replace the tape and refund your postage.

Meanwhile Chris Hunt offers some clues, and asks for help in getting past the foothills, into the sewers, and opening the sluices. Chris reports that he has taken note of the shape of the map, as suggested by Neil Duffin. It resembles a Giraffe, says Chris.

spine. For the mysterious inhabitants of the circus are doomed to languish in eternal captivity unless...

Not an easy game to complete, and ideas are needed to solve it. A point obviously not missed by the author, for if in frustration you use words best not printed here, the computer will reply "What a foul mouth you have!"

Every similar in presentation to a Scott Adams adventure, *Circus* can be recommended as Christmas fare to almost all Adventurers. *Circus* is available for a wide range of systems, including 48k Spectrum, BBC (A or B), TRS-80, Colour Genie, Atari 400/800, Commodore 64, Dragon 32, 16k ZX81 and Lynx. The suppliers vary from micro to micro, so would-be purchasers should scan the adverts.

And now I must get back to start that generator — time to turn on the Christmas tree lights!

DAN DIAMOND PRIVATE EYE

Whoever Faint-hearted Franklin is, he made certain he would be comfortable in his after-life. That is quite evident to anyone venturing into his tomb, an experience available to Dragon, Oric, and BBC owners.

The case file that comes with *Franklin's Tomb* takes up the story of Dan Diamond, American private Dick with a taste for Courage beer and jokes of a

CONFESSIONS OF AN ADVENTURER

Following the scandalous July revelation of my defeat at the hands of *Mystery Fun House*, I am pleased to announce that I do not have to make a similar degrading admission about *Voodoo Castle*.

The object of this game is to lift the curse placed upon Count Cristo, and the player has to piece together clues on how to do this, whilst finding the necessary objects to enable him to perform a "grand finale" around the coffin.

There are problems with witches brew, some explosive chemicals, a chimney and a ju-ju bag to name but a few. And what is that raven doing outside the self-shutting window?

Great fun until you get stuck — and there are some very sticky places! The trouble is there are also some red herrings to add to the bafflement factor.

Voodoo Castle, written by Scott's wife Alexis Adams, is available for the Vic-20 (!), and has been the steady source of desperate letters for some months.

"I've done what it says" writes Andrew Bethell from Walsall, "and nothing happens. If I don't lift the curse soon I shall drink the witches brew and we all know what happens then, don't we?"

A good demonstration of how Alexis

can be every bit as mean as Scott, for there is one deed to perform that is not mentioned in the clues you collect!

Shaun Chetwood from Telford and Margaret Booker from Chesterfield have both written about *Voodoo*. Margaret, playing the game with eight others since last Christmas, was especially desperate.

Her husband was refusing to let her buy another adventure until *Voodoo* was solved. I rushed her, and Shaun, a reply framed to help them re-start without giving the whole game away! I also suggested that Margaret might try *Adventureland*.

Back came two more letters. Mr Booker had bought *Adventureland* for Margaret (proving that a word to Help-line CAN be rewarding!), but both she and Shaun were still independently stuck in the same place! Both queried whether their Vic cartridges might be faulty or different from my TRS-80 version.

I began to wonder the same myself, until, having spelled things out in detail to Shaun, he soft-footed it back to the coffin, and was soon in clover! His last letter made moving reading!

Voodoo Castle is available for TRS-80, Video Genie, Vic-20, Apple, Atari and TI99/4a. The clues I passed on to Shaun and Margaret are available for all *C&VG* readers, upside down!

similar standard. But this had little to do with the Adventure that I, as Dan, was about to play.

I played the Dragon version, and thought the game started off in a rather mundane way, with a small puzzle to solve before getting access to the tomb proper.

The display was split rigidly into location description (top left), displayed inventory (top right), and conversation (bottom four rows). It looked rather stodgy, the response was slow, and I nearly didn't bother to continue playing.

A case of first impressions being misleading, because it soon became apparent that the response to location-changing commands was very prompt, abbreviations N,S,E, and W making moving around quite a slick procedure.

The response time varied considerably depending on the command, and averaged-out, was quite acceptable. Lack of cursor (my pet hate!) was partially compensated for by an obliging 'beep' when the computer was ready for more input.

Having entered the ornate doors leading down, I set about exploring the crypt.

Here was a large area for exploration. The network was easy to get around and interesting to tour. You could visit an Aquarium (permanently?), tour a gal-

lery of murals, play a juke-box (got the coin?) and listen to Franklin and the All Stars, treat-yourself to a steam-bath and much much more.

Very entertaining stuff — but all the time you might wonder what the objective is, until and unless you have visited the right place. Once visited, the search is on in earnest, for you know what you need but not how to get it all!

"The best Adventure I have seen for ages!" commented Neil, my 15-year-old son. I was inclined to agree with him! Definitely an acceptable Christmas present for any friendly Dragon.

The game is written in Basic and unfortunately the BREAK key is not disabled. I say "unfortunatley", because if you accidentally hit BREAK the fixed display will be spoiled. To recover, simply type GOTO 350, and then drop an item you are carrying to relist your inventory. Don't list the program or believe me, your fun will be spoiled!

The cassette comes complete with an 18 page 'case file' which includes pictures of many of the text-described locations.

Franklin's Tomb is from Salamander Software of Brighton, and available for Dragon 32, 48k Oric, and BBC 'B' micros at £9.95 from a number of suppliers. A sequel is promised — I can't wait!

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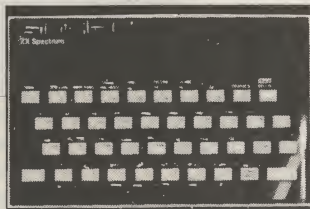
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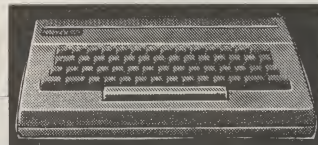
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*Frogger	ULTIMATE	Wacky Waiters
O.A.C.C.	Jet Pak	Catcha Snatcha
*747 Flight	Pssst	RABBIT
MICRO POWER	Cookie	Space Phreaks
*Killer Gorilla	Trans-Am	Annihilator
*Croaker	QUICKSILVA	Krell
*Chess	Mined Out	Space Storm
*Laser Command	Timegate	Skramble
ATARI	Meteor Storm	Quackers
Miner 2049 ER (ROM)	Astro Blaster	Galactic Crossfire
Preppie	HEWSON	Orbis
Preppie II	Heathrow A.T.C.	Alien Soccer
Choplifter (ROM)	DRAGON 32	Hopper
Zaxxon	Comsic Zap	MICRO-GEN
Baja Buggies	Cuthbert Goes Walkabout	Puckman
Airstrike	Defense	COMMODORE 64
Claim Jumper	Dragon Invaders	RABBIT
Aztec Challenge	Frogger	Escape MCP
The E-Factor	Galactic Ambush	Grave Robbers
Spider Invasion	Golf	Cyclons
Meltdown	Katerpillar Attack	Centropods
Up Up and Away	Morocco Grand Prix	Pakacuda
Necromancer (32K)	Phantom Slayer	INTERCEPTOR
Gorf (ROM)	Scarfman	Crazy Kong
Mountain King (ROM)	Shuttle	Frogger
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16K CASSETTE UNLESS	Talking Android Attack	TERMINAL
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C.V.G/12

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Kevin Toms

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- ★ 7 skill levels
- ★ Save game facility

Addictive

Comments about the game from press and our customers

"FOOTBALL MANAGER is the best game I have yet seen on the Spectrum and my personal favourite of all the games on any micro ... To the ordinary person it is an excellent view of what can be done in the field of computer games ... The crowning glory of this game is the short set pieces of match highlights which show little stick men running around a pitch, shooting, defending and scoring ... It is a compulsive game but people who cannot take game sessions of 9 hours or so, which happened on one happy Sunday, will be grateful to know that there is a 'save to tape' option. FOOTBALL MANAGER has everything it could ... The

originator, Addictive Games, certainly deserve the name." Rating: 19/20 (Practical Computing – August 1983).

"When I first received this game I spent the best part of the weekend playing it. Since then I have returned to it more often than any other. The truly addictive quality of this game is the remarkable way it mirrors the real football manager's problems ... (Personal Computer Games – Summer 1983)

"It's my own fault you *did* warn me – I am totally and completely hooked on FOOTBALL MANAGER." (Mr. A. Wright – Lancashire.)

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THE SHAPE OF GAMES *Looks At* TO COME

LASER GAMES

New realms of action and adventure will be opened up by the arrival of laser-disc games in your local arcade.

Gone are the days of one-dimensional computer video graphics. Now you can play space games against a backdrop of real stars or blast around a real race track while sitting safely in the confines of an arcade machine.

Laser games will revolutionise the flagging arcade industry if reactions to the several machines on show at a recent preview of what's new for '84 are anything to go by.

We've already mentioned laser games in these pages — but now we can also bring you pictures of what you can expect to see. You'll be amazed — believe us!

It all began with Seag's Astron Belt — already in action in some arcades around the country. It puts you in control of a video-graphic ship blasting through space created by images stored on the laser-disc.

You fight alien ships, fly through dangerous rocky canyons, attack alien ground bases on mysterious planets — and it all looks as if you are watching the action on TV and not playing an arcade game at all! Astron Belt also has another added-extra — the Vibra-Seat! If you blast an alien ship out of the sky



computer-style graphics than Astron Belt and is therefore not quite so stunning as its predecessor — but is still a good game nonetheless.

Moving back to earth Taito have entered the laser-disc race with a Grand Prix racing game called Laser Grand Prix.

A video car is superimposed on film of the Japanese Mount

Fuji international race track.

You race against other video cars in an extremely realistic simulation of a formula one race. The roar of the engine and squeal of tortured tyres as you attempt to take the bends at top speed all add to the illusion.

The games' opening demo is pretty neat too — with the video car being transformed into a real

race car as it streaks over the start line.

Laser Grand Prix also features bonus screens for winners — like the Spark Race, a night driving challenge and the Fantastic Race, a trip into the realms of fantasy still in the seat of a race car. The game comes in a large car cockpit type cabinet — so you won't miss it if one arrives in your local arcade!

However, the undoubted star turn of laser games at the moment has got to be Dragon's Lair — a fully animated sword and sorcery adventure with a touch of Tom and Jerry thrown in for good measure.

Dragon's Lair is the story of Dirk the Daring, a brave knight who faces many trials and tribulations in his quest to rescue a beautiful maiden from the clutches of a fire-breathing dragon.

You control the actions of Dirk the Daring and attempt to keep him alive in his struggles against evil wizards, giant black riders, deadly bugs, monsters and much much more. Dirk can face up to 600 different challenges in 40 different locations before he gets to the dragon — but you will have to spend a lot of cash to see them all!

The controls are fairly simple — a joystick moves Dirk backwards and forwards while "action" and "sword" buttons control those aspects of the game.



the seat shakes just as if you were caught up in the backwash of the explosion. Quite an experience!

Following a similar space theme is Inter-Stellar from Funai. This takes you across strange alien deserts on lost planets and pits you against fleets of alien craft. Inter-Stellar uses more

WHAT'S NEW DO-BE-DO-BE-DO!

MR DO'S CASTLE

Mr Do! was tremendously popular in arcades and now has a follow-up. Mr Do's Castle is the continuation of his adventures.

Mr Do has to exterminate unicorns invading his castle. He does this by dropping a block with a hammer which knocks unicorns into a hole, or more simply by dropping a block on top of the beasts.

Mr Do can gain extra power from blocks marked with a death's head. This exterminates several unicorns at one attempt. Otherwise Mr Do has to avoid the pursuing unicorns by pulling up ladders behind him as he moves around the screen.

Bonuses are provided by dropping three blocks marked with keys which brings a shield into the highest window of the castle. If Mr Do can wipe out the shield the unicorns change into "EX-TRA" and by wiping out the "EX-TRA" with a hammer or by dropping on it, a flag runs up a pole. Run up five flags and another Mr Do appears.

At this stage of the game — continually more challenging — the final unicorn changes into several blue unicorns which are faster and more ferocious and if Mr Do survives them for 30 seconds they change into double unicorns and it takes a very skilled player indeed to survive their attack.



You have to use the controls at precisely the right moment — or Kirk will die an agonising — but often amusing — death.

And all this action is presented in cartoon style visuals. It's just as if you were watching a Disney cartoon adventure on TV — except that you are in control of what happens next.

Lasers



As you've probably guessed by now it's very hard to do Dragon's Lair justice by simply writing about it. It's definitely a game that has to be seen to be believed! That's where our pictures will help.

Dragon's Lair comes from Starcom, a division of Advanced Microcomputer Systems, the video game company whose Space Wars machine set the scene for the sci-fi arcade game boom in the late 1970s.

The company who created the amazing animation for Dragon's Lair strangely wish to remain anonymous — but American sources say that it is the work of Don Bluth who was behind the animated feature film *The Secret of NIMH*.

One and a half million dollars was spent on software alone for Dragon's Lair — \$250,000 is the usual development budget for a video game. So that's why you are going to have to fork out more of those 10 pence pieces to play the game.

But before we go too wild about Dragon's Lair it does have its drawbacks — the price to play being the first.

It's going to be a difficult game to learn too — adding to the expense.

On the technical side — when you switch from location to location or situation to situation, there is a nasty glitch on the



screen, just like when you change channels on your TV. This is caused by the speed of the laser scanning the disc — it simply isn't fast enough. Yet!

A way around this would be to use two discs tied into the machine's computer memory. But this would again add to the cost.

Having said that Dragon's Lair is still a big jump in games technology. And, so say the experts, there's much more to come.

Victor Penman, the man who watched over the creation of Dragon's Lair reckons that the next generation of games will



involve other senses — smell, touch and possibly taste to enhance realism of the games. We'll just have to wait and see!

A new Dragon's Lair style game is due in the Spring.

Another sword and sorcery theme laser game is called Eon and the Time Tunnel in which the player travels through a movie landscape of dark mysterious



castles and alien cities. We at C&VG haven't managed to see this one yet — but you'll be the first to hear about it when we do.

Rumours have been filtering through from the States about film crews lurking secretly in the Grand Canyon and a science fiction special effects company working on a special 3D process for forthcoming laser games.

It's only a matter of time before this laser technology makes a switch to the home micro market. It could be that arcade machine manufacturers will be selling their laser discs — or adaptations of them — to run with popular home computers fitted with a special interface.

You might even be able to get an arcade style cabinet for your home — and change games by simply switching the laser disc!

And then there's the possibility of linking up cable TV and laser disc technology. The possibilities seem endless.

Make no mistake — the Laser-disc will revolutionise games playing in the next couple of years. Maybe programmers will have to learn to use film cameras or become animation experts instead!

It all seems such a long time ago that those first little green aliens flickered across the screens of a hundred machines announcing the dawn of the video age. Next stop — the age of the laser!



A wide range of new and not so new pin-tables went on show at the recent Preview 84 arcade show held in London.

For me, the star of the show was Ballys Centaur II — the latest in the long line of remakes. It seems only yesterday that the original hit the arcades.

This pin has all the attraction of the original — the striking black and white playfield, many special features and the growling Centaur voice. In fact it's difficult to see what — if anything — has changed, apart from a smaller backplash and a rearranged digital score readout. It still retains all its old addictiveness and playability.

Also from Bally comes Gold Ball — is this a remake of Silver Ball? This is a fairly basic pin with some nice features. But I didn't get to play it long enough to see if that fabled "gold" ball makes an appearance — like a "silver" one did in that first pin.

Award for the worse looking pin-table of all time must go to Zaccaria. This awful creation was covered in flower-power style artwork and was called something like Love. I could be wrong, it was difficult to work out the name from among the multi-coloured floral patterns.

Those dreadful patterns repeated themselves on the split-level playfield. Each pot-bumper even had a dainty little flower painted on top of it! As to playability — if you can put up with the assault on your eyes — you might be able to enjoy an adequate game. It speaks to you too — but I couldn't quite make out what it was trying to say.

Next issue we hope to bring you news from the Pinball Owners' Association convention, where among other events, the new Pinball Wizard will be chosen from among the ranks of pinball aces who belong to the association.

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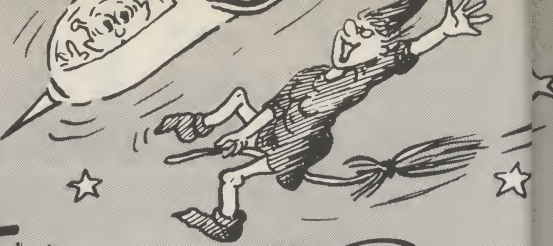
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Once upon a time if you wanted to write a good game then you needed to be a good programmer. But not any more. Programs are appearing which allow you to create games without knowing anything about the computer. Robert Schifreen tested the two latest offerings.

GAMES Without TEARS



If you've always fancied yourself as a designer of video games but don't think you are skilled enough to program your own games, then this new software innovation might interest you.

Called *The Games Designer*, this program allows you to design your own video games — even if you know nothing at all about programming! The games are all in machine code and, says the maker, will be as good, if not better than most of the commercial software currently available for the machine.

If all this sounds too good to be true, then you should realise that there are some limitations to the system. Firstly, you cannot design your own unique game from scratch. You are only allowed variations on the theme of *Invaders*, *Asteroids*, *Scramble* and *Berserk*.

Once the tape has loaded, you are presented with a menu of options. At this point, there are 8 separate games stored in the system and you can select any one of them. The games are not stand-alone programs but are banks of data which need the actual designer program to run. A game can be saved and loaded once written.

You can either alter one of the 8 demo games supplied, or create your own. The only limitation here is that it can only be one of the 4 main types mentioned above.

The first option in the menu is to play a game. This plays the current game and uses the cursor keys for movement. The zero key is used to fire. To change the current game to another of the eight, you choose option two.

Taking option 3 puts you in to the sprite editor.

Sprites are 12 pixels square as opposed to the normal 8 available in Basic.

These are the characters which will appear in your game including all the aliens, ships, missiles and the like. If you want animation, like a space invader which constantly blinks, you can define two different sprites and the program will constantly flick between the two during play.

The menu option which has the most dramatic effect on a game is the configuration section.

Selecting this option takes you to yet another menu which allows various

characteristics of the game to be set.

Most important is the game format which is a number between 1 and 4 corresponding to the four types of game. Adding 4 to any of these values makes the game joystick compatible. You can also set the background and foreground colours here.

There is also a special effects section which does wonderful things like scattering random stars over the playing area. You can also specify whether



aliens appear singly or in groups. You can provide a shield for the laser base if you wish.

Next come the sound effects. Entering this option lets you alter the sounds by means of 4 sliding controls displayed on the screen.

There is a reasonable simulation of a definable envelope command here, and the sounds available are quite good.

There are 4 different options, with different noises producible for missile sound, bomb sound and explosions of ship and alien.

The attack wave command allows control of movement on the screen. Here you can set up your attack waves, and specify which sprites will be used to form them.

The actual movement is controlled by another menu option. There are a number of different movement paths which you can define and then link them to each other creating long chains.

Whilst setting up the attack waves, you are also given control over such matters as how many points will be awarded for destroying certain aliens and also the maximum number of aliens in an attack wave.

Once you have created your masterpiece you can save it to cassette. The system used differs from *The Quill* in that the cassette is not a self contained game. It is simply a data file which needs to be loaded along with the designer itself.

Although this package is sold as a games designer, there is a limit to the originality of the games which can be produced. You are always limited to variations on a theme, although it should be said that these variations can be quite divorced from the original.

However, you can produce smooth, fast machine code games with little

effort — and you get 8 demo games as well. *Games Designer* comes from Quicksilver at £14.95 and runs on a 48k Spectrum.

If you've ever tried your hand at writing an Adventure program then you'll know just how long and complicated a job it can be.

But that's been made a lot easier with *The Quill*, a program for the Spectrum which allows you to design your own adventure games. You can now put all your effort into creating the scenes and pitfalls, and leave *The Quill* to do the programming for you.

The best way to test such a program is to use it to create a simple Adventure, so that's what I did.

Firstly I designed the game by drawing a map showing all the locations and how they were connected.

There were just four locations in my example, although in reality you aren't limited to any size. The program itself takes around 8k, so the database for the game can be massive if you have the time to design it.

Once you have your map designed, you then have to tell the interpreter about the locations. You type in the text which is associated with that particular location.

The entire program is menu driven. There's a main menu with around 20 options such as alter vocabulary, select movement table etc., and you can alter any part of your game at will. Within each of these choices there's a small sub-menu with 2 or 3 choices.

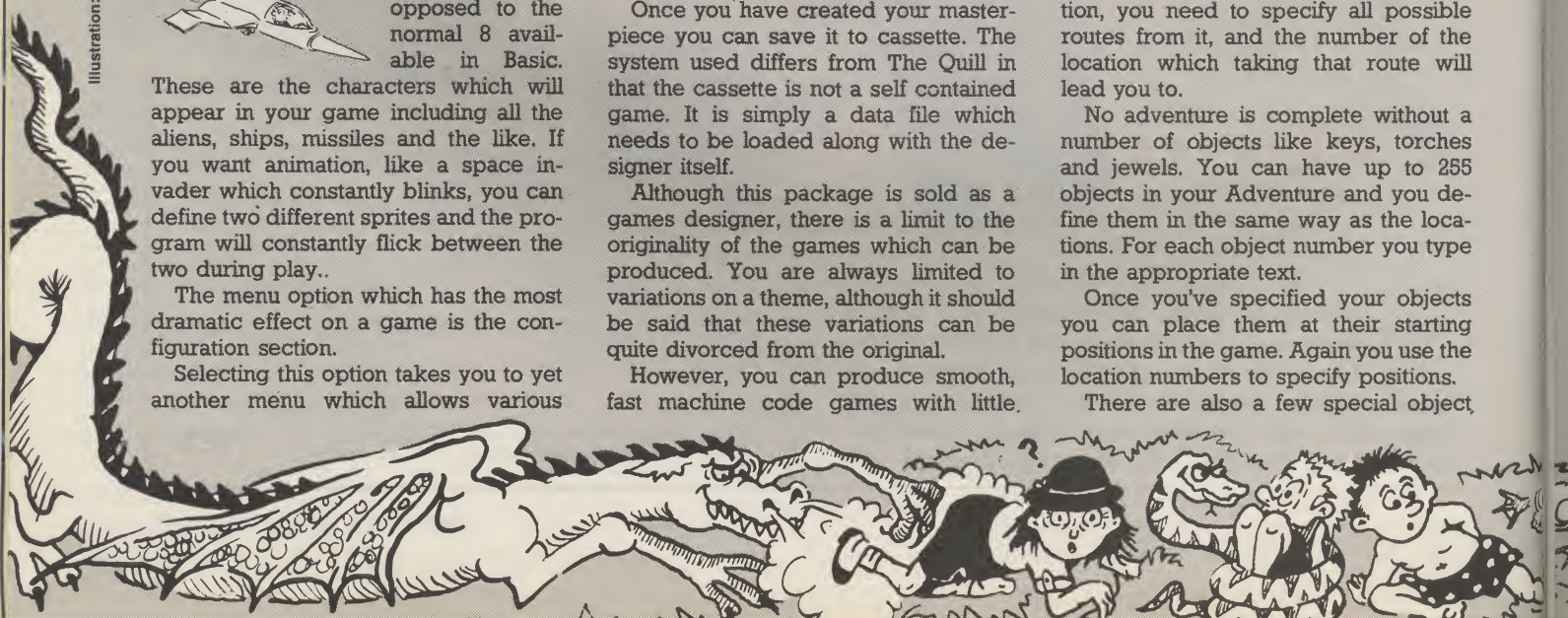
Once you have defined the locations you have to tell the program how they are interconnected.

For each location, you need to specify all possible routes from it, and the number of the location which taking that route will lead you to.

No adventure is complete without a number of objects like keys, torches and jewels. You can have up to 255 objects in your Adventure and you define them in the same way as the locations. For each object number you type in the appropriate text.

Once you've specified your objects you can place them at their starting positions in the game. Again you use the location numbers to specify positions.

There are also a few special object



numbers, for example 254, which implies that the object is currently being carried by the Adventurer.

The most important part of an Adventure is the range of words which the computer can understand. The program may not understand TURN ON THE LIGHT, but may be totally familiar with a command to LIGHT LAMP.

The heart of the Adventure is called the event table. It is this which links the actions which the program takes, to the commands which the player types in.

All the normal commands associated with Adventures are available, like Inventory, Describe and Quit. A player can also save the current game to tape and continue his quest at a later date.

This is distinct from saving the completed adventure to

tape which can be done not by the player but by the person creating the game with The Quill.

Because certain actions are dependent on other conditions being satisfied, The Quill provides a number of flags which the program can set. For example, if a player picks up a key the program may set flag five to a value of one. Then, if the player tries to open the door the program will look at the value of flag five to see if the player has the key. If he or she does, then the door will be opened. If not, then the Adventure will say something like "you cannot open the door without the key".

Additional commands also exist such as BEEP, which enables you to add limited sound effects to the game. No doubt most people getting killed by a dragon will do so to the accompaniment of the Death March.

At any time you can test your Adventure and alter any part of it.

Using The Quill lets a computer user create a playable Adventure game. It will take quite some time to produce a good game, and a clear map is essential. Nevertheless, you do not need to know anything about programming. In fact, using The Quill will teach a novice something about writing programs as he works through the simple language which the Adventure interpreter understands.

This software is very professionally produced. It comes with a 52 page manual which takes you step by step through the creation of a simple Adventure.

Obviously if someone creates an Adventure he will wish to save it. You can do this with The Quill and it will save both the Adventure and a short Basic loader program. This means that the tape produced will auto-run and

appear no different from a commercially produced program.

Gilsoft, creators of The Quill, are quite happy to let people sell their creations to others. They do not demand royalties as Softek do on their compiler. There is simply a message in the manual saying that "if you intend to sell an Adventure written with The Quill we would be grateful if you could mention somewhere in it that it was written with The Quill". Now that's the way to handle such matters, isn't it.

The Quill is made by Gilsoft which is based in Barry, South Glamorgan. You can buy a copy from selected computer outlets or direct from Gilsoft by mail or phone 0446 736369. If you're an adventure fan then you'll find it worth every penny of the £14.95 price tag.

Melbourne House have a similar program on offer for Spectrum owners.

It's called the high resolution user friendly real time games designer, or HURG for short!

Unfortunately there's only one copy of the program in the world at the moment, and that's in Australia. However, Computer and Video Games has discovered information about the program and it sounds very similar to the Quicksilver offering.

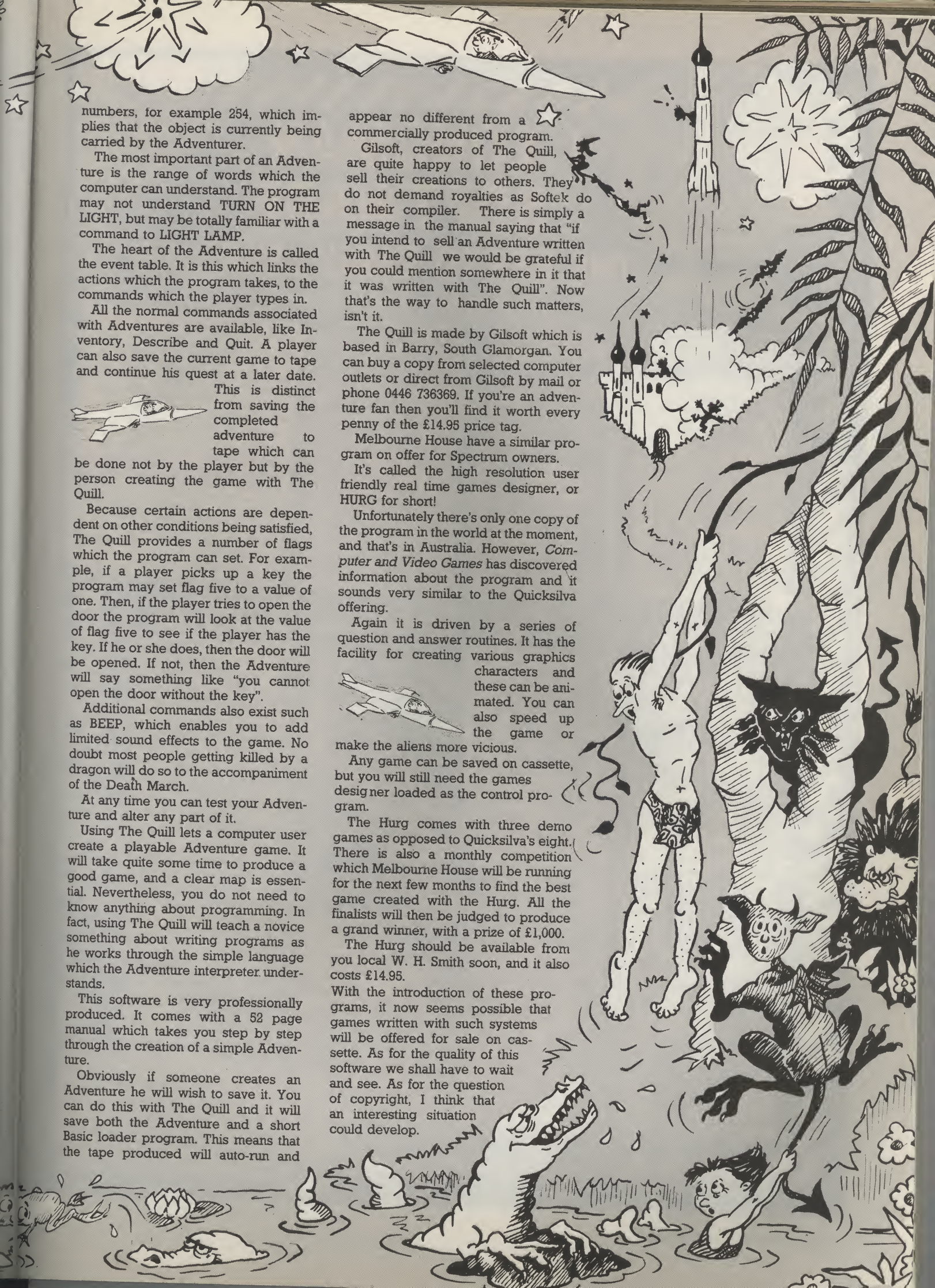
Again it is driven by a series of question and answer routines. It has the facility for creating various graphics characters and these can be animated. You can also speed up the game or make the aliens more vicious.

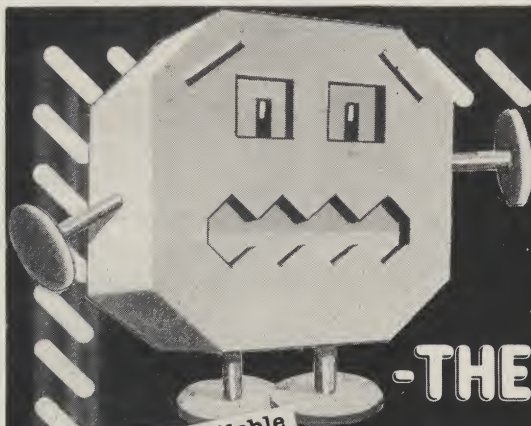
Any game can be saved on cassette, but you will still need the games designer loaded as the control program.

The Hurg comes with three demo games as opposed to Quicksilver's eight. There is also a monthly competition which Melbourne House will be running for the next few months to find the best game created with the Hurg. All the finalists will then be judged to produce a grand winner, with a prize of £1,000.

The Hurg should be available from you local W. H. Smith soon, and it also costs £14.95.

With the introduction of these programs, it now seems possible that games written with such systems will be offered for sale on cassette. As for the quality of this software we shall have to wait and see. As for the question of copyright, I think that an interesting situation could develop.





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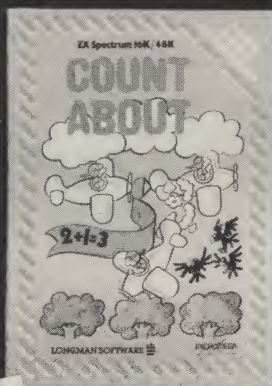
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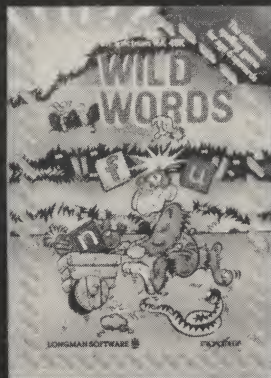
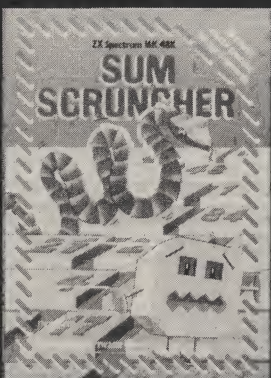
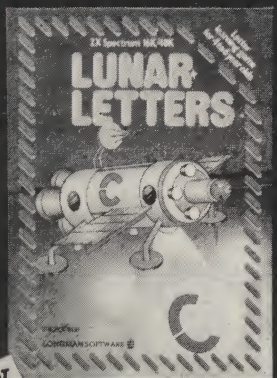
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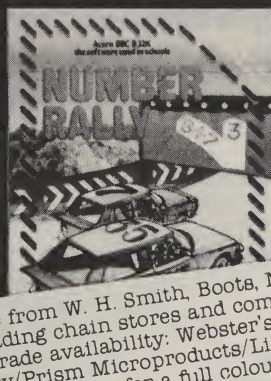
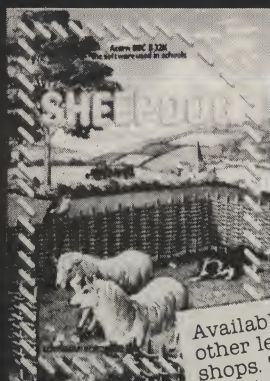
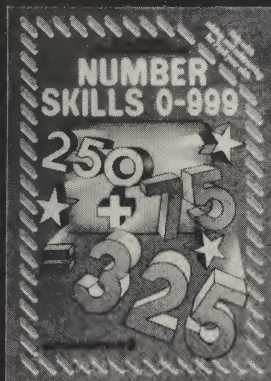
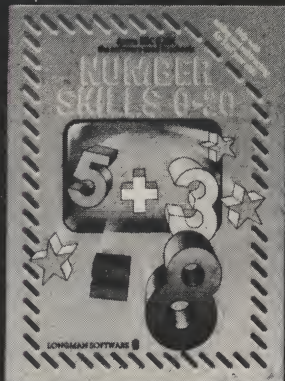
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Available from W. H. Smith, Boots, Menzies, other leading chain stores and computer shops. Trade availability: Webster's Software Directory/Prism Microproducts/Lightning. In case of difficulty, or for a full colour catalogue, write to **Division GS26 (Software)** Longman Group Ltd Burnt Mill Harlow Essex CM20 2JE

LONGMAN SOFTWARE

NEXT MONTH IN



BOOK OF ADVENTURE

Stand by for Adventure! It's coming your way in our next issue. We've gathered together our team of Adventure experts to bring you a very special supplement dealing with all aspects of this fast growing field of games playing. Read on for details...

EXCLUSIVE ADAMS!

Within the fun packed pages of our Book of Adventure we've got an exclusive interview with Scott Adams — the man who has baffled more Adventurers than he's had hot dinners. There will be lots of reviews, news and features on all aspects of Adventure gaming, plus a look at Adventure on video-games systems — and it's all put together by *C&VG's* ace Adventurer Keith Campbell.

MICRONET MISSION

Can you write good games programs? Do you want to win a Micronet Modem plus a years subscription to the Micronet 8000 system — a window on a whole new world? Well, rush out to your newsagents on December 16th and enter our great Micronet programming contest. Full details next issue.

COLECO CONTEST

Last issue we promised you some ADAM family computer systems. Coleco are at this very moment rushing the Adams across the Atlantic — but in the meantime we've managed to get hold of three ColecoVision video-games systems plus Turbo Drive add-ons as prizes in our Name the Game contest.

FINALLY...

We've got games listings galore for the Spectrum, BBC, Atari, Dragon, Texas, Vic-20 and the Sharp.

On Sale
December 16th

Which home computer gives you so much software for so little?

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Number Gulp	t.b.a.

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CO-OP, Currys, Fine Fare, Ketts,
Photomarket, Rymans,
Spectrum, Telefusion.

And at:

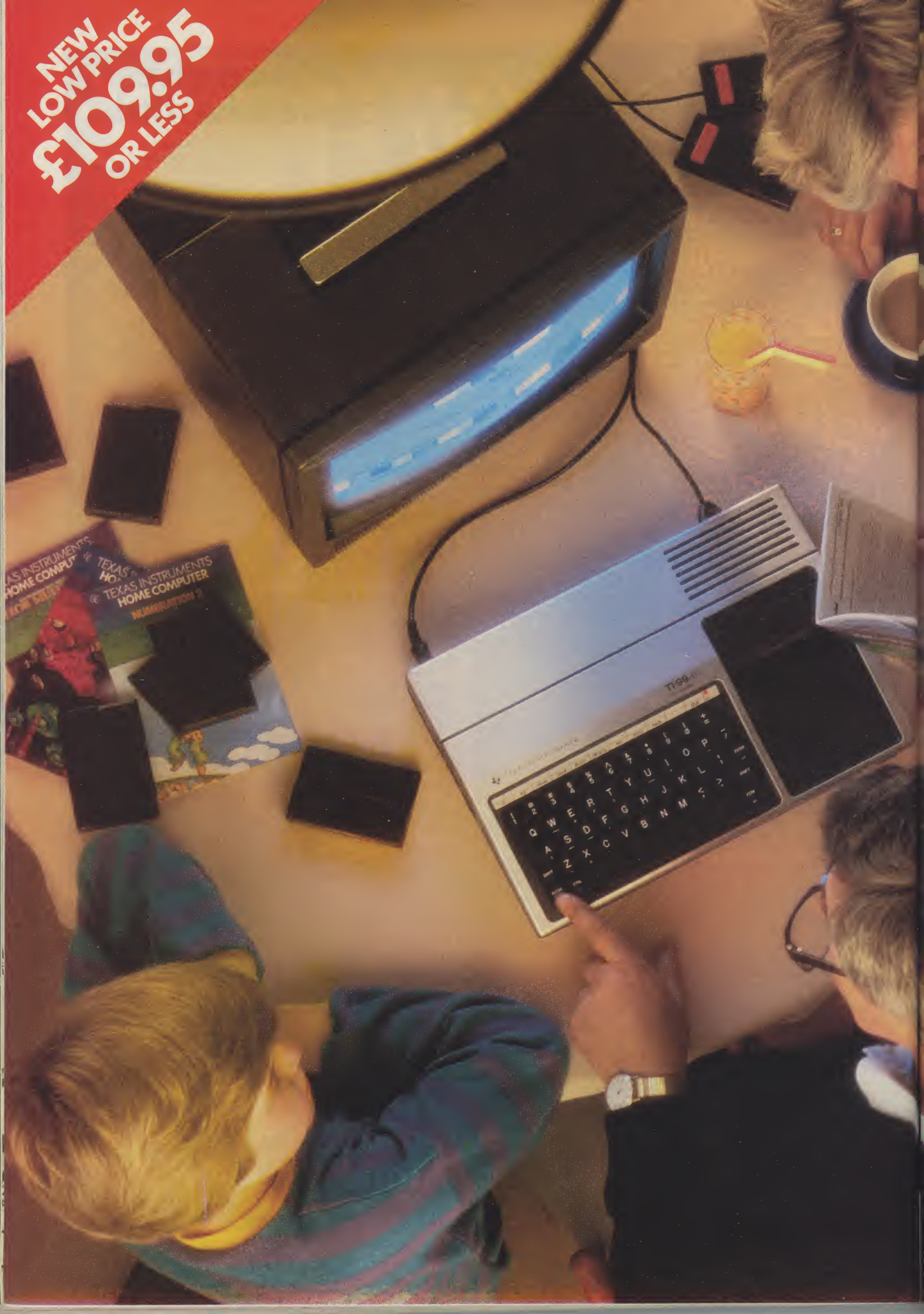
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Akhter - Harlow
Anglia Audio - Bedford
Anglia Sound - Stevenage
Audio Marketing - London
Audio Vision - Faversham
Bagnall - Stafford


Carvells - Rugby
Combined Trading - Hatfield
Computer Supermarket -
Manchester
Cotton TV - Peterborough
Dean and Son - London
Delta Electronics - London
Densham Computers - Poole
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Fenwicks - Newcastle
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Welwyn
And many other leading
Computer Stores.

Turn the page and see the unbeatable.

NEW
LOW PRICE
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OR LESS





The unbeatable TI Home Computer. It's all the computers your family will ever need.

Buying a home computer is something you have to get right first time. It's too late when you've got one to find it won't take plug-in software. Or can't be programmed without an expensive accessory.

The TI Home Computer is a real computer system

The TI Home Computer has got the memory power you might expect from more expensive computers, built in. At its heart is a powerful TMS 9900 16-BIT Microprocessor. Most other home computers have only an 8-BIT. And you can expand the memory from 16K of RAM up to 52K.

The total memory capacity is 114K Bytes.

A wide range of software for everyone

Another feature that makes the TI system so powerful, yet so easy to use is Solid State Software.™ These plug-in cartridges cover everything from space games like Parsec™ to teaching maths, managing home finances and composing music. And the range is getting wider all the time.

It even has what professionals look for in a home computer

CPU: TMS 9900 16-BIT, plus 256-byte Scratchpad RAM.

Memory: Total 114K bytes; 26K bytes ROM internal; up to 36K ROM cartridges external; 16K built-in RAM expandable to 52K bytes.

Keyboard: 48 Key QWERTY, alpha lock, function key auto repeat.

Sound: 5 octaves, 3 simultaneous tones, noise tone.

Colour: 16 foreground and background. High resolution.

Interfaces: Cassette, TV, 2 joysticks, main peripheral port.

™ trademark of Texas Instruments.

More than one programming language

The standard programming language, TI BASIC, is built into your TI Home Computer so you can begin programming right away. But there's an expanded range of optional languages like Extended BASIC, TI Logo, USCD-Pascal, TIFORTH and Assembler.

With these you can fully expand your programming skills.

A wide range of peripherals

Most computers lose a lot of memory when you add peripherals. The TI Home Computer is different. Every peripheral comes with its own built-in programs to keep the loss of memory to a minimum.

The convenient Peripheral Expansion System houses up to eight peripherals. Additional hardware cards simply plug in. You can even add a complete Floppy Disk Memory System.

The peripherals include memory expansion, RS232 Interface, P-Code card and more. There's also a sophisticated matrix printer and Solid State Speech™ synthesizer – which you can use with your own TIBASIC programs.

A lot more for no more

The TI Home Computer gives you so much more without costing more. At today's price it's exceptional value. Take your family round to try one. If you never try it you'll never know what you're missing.



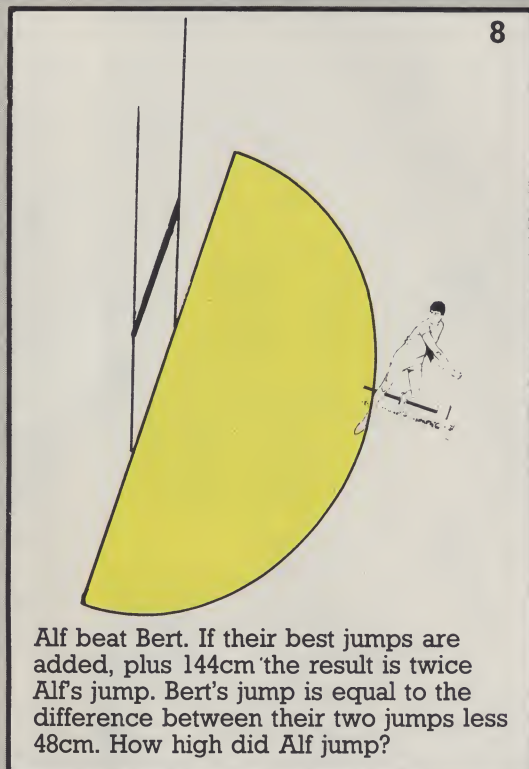
TEXAS INSTRUMENTS

Creating useful products
and services for you.

GET SET FOR THE DEVIOUS DECATHLON!

On your marks, get ready, GO! They are off and running in the *Computer and Video Games'* Devious Decathlon! Ten, yes ten Atari VCS video games systems are up for grabs in this test of your mental agility, plus copies of Activision's brand new Decathlon game. This features all the 10 challenges of the real-life Decathlon. So you can aim to be like Daley Thompson from the comfort of your own armchair!

Trevor Truran has come up with a puzzling equivalent to the Decathlon — ten posers to test your brainpower. Can you come up with the top score and win an Atari VCS?



Alf beat Bert. If their best jumps are added, plus 144cm the result is twice Alf's jump. Bert's jump is equal to the difference between their two jumps less 48cm. How high did Alf jump?

Crack the code and find the secret four-digit number. Here's a clue: if the number had a nine and you tried 9999 you would get four for DIGIT and one for PLACE.

CORRECT	PLACE	DIGIT
1	0	2
2	3	3
3	0	5
4	6	4
5	0	3
6	3	2
7	2	2
8	3	4
9	0	3

Use six of the seven numbers on the board to make the largest multiple of 91 you can. Divide your answer by 91 to get your score.

If Coe wears 75 and CRAM wears 1 and ELLIOT wears 675 then THOMPSON wears ?

LONG JUMP

D	A	L	E	Y
A	D	A	L	E
L	A	D	A	L
E	L	A	D	A
Y	E	L	A	D

By moving from square to adjacent square, how many ways are there to spell DALEY?

582
37.69

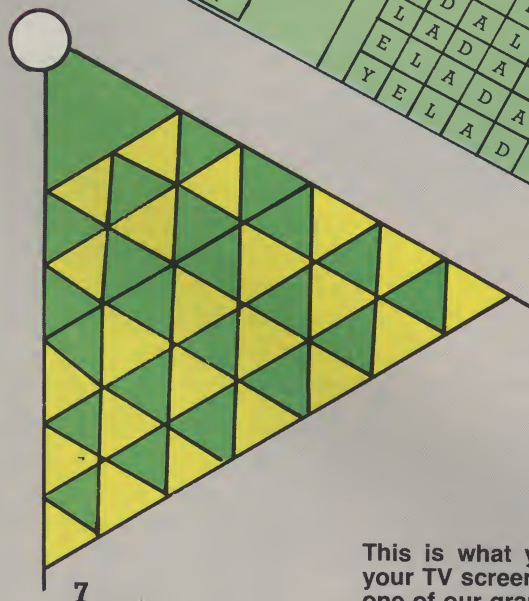
Split the seven digits on the board into TWO numbers: a four digit multiple of 3 and a 3 digit multiple of 4. Add the two numbers to get your score for this event.

How many triangles are there in this picture?

TRIANGLE

What number belongs in Lane Six?

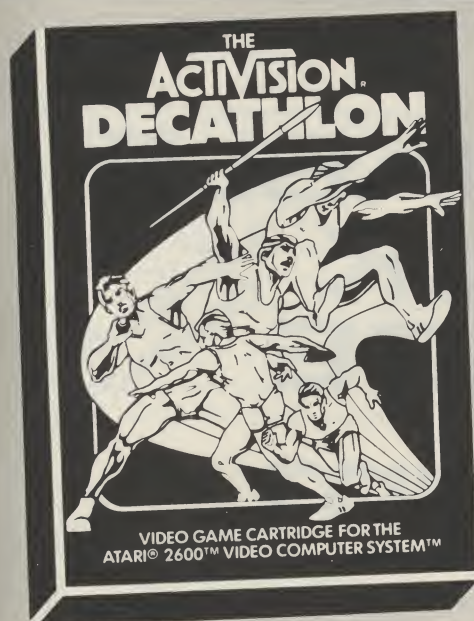
1	7
2	17
3	31
4	65
5	127
6	?



7
How many of the triangles of all sizes are more YELLOW than GREEN?

This is what you'll see on your TV screen if you win one of our grand prizes kindly donated by our friends at Activision, the Atari people who make many top selling games for the Atari VCS. This is just one screen in the game that takes you right through the Decathlon challenge.





THE RULES

You can win one of ten Atari VCS video games systems by solving our Devious Decathlon puzzle. We know it's a bit of a marathon — but we reckon it'll keep you thinking over the Christmas holidays.

To give you a bit longer to work out Trevor Truran's mind-twisting athletic action for intellectuals we're keeping the contest open until January 16th.

Thanks to our friends at Activision, who are supplying the Atari systems, we've also got 10 brand new Decathlon game cartridges to give away — so you'll have something to play with if you win one of these great prizes.

All you have to do is work your way around the C&VG athletics track answering the questions as you go. The answer to each puzzle is a number which you enter as your score for that event in the coupon provided.

Your aim is to find the highest possible score for each round in the Decathlon — and therefore the highest final total.

You may, if you wish, take a guess at the answer, but beware! If your guess is higher than the maximum possible score for that puzzle then you'll get a zero score from the judges!

Send in your completed coupon to Decathlon Competition, Computer and Video Games, Durrant House, London, EC1R 5EJ. Normal C&VG contest rules apply and the editor's decision is final.

QUESTIONS AGAIN?

1. By moving from square to adjacent square, how many ways are there to spell DALEY?
2. What number belongs in Lane Six?
3. How many triangles are there in this picture?
4. In order to increase his average (after four events) by one third Alf must score 624 points in the fifth event. What was his points TOTAL for the first four events?
5. Crack the code and find the secret four-digit number. Here's a clue: if the number had a nine and you tried 9999 you would get four for DIGIT and one for PLACE.
6. If Coe wears 75 and CRAM wears 1 and ELLIOT wears 675 then THOMPSON wears?
7. How many of the triangles of all sizes are more YELLOW than GREEN?
8. Alf beat Bert. If their best jumps are added, plus 144cm the result is twice ALF's jump. Bert's jump is equal to the difference between their two jumps less 48cm. How high did Alf jump?
9. Use six of the seven numbers on the board to make the largest multiple of 91 you can. Divide your answer by 91 to get your score. (long jump).
10. Split the seven digits on the board into TWO numbers: a four digit multiple of 3 and a 3 digit multiple of 4. Add the two numbers to get your score for this event. (triple jump).

WAR GAMERS

Fantasy film fans soon got to grips with our War Games competition and postcards came flooding in thick and fast! We've waded through the pile of mail to pick six winners who will be receiving the Thorn-EMI games cartridge based on the movie.

ATARI 400

Stephen McKone, 254 Grimsby Road, Cleethorpes, South Humberside, DN35 7ET.

Tim J. Hale, 70 Mayton Street, LONDON N7.

VIC-20

J. H. Turner, The Downs, The Warren, Ashted, Surrey, KT21 2SA.

Gregory Brown, 34 Meynell Drive, Leigh, Lancs, WN7 3JR.

TI99/4A

John Platt, 15 Brynnewydd East, Prestatyn, Clwyd, LL19 9ES.

Simon Riley, 10 Church View, Westbrook Park, Kingsley, Cheshire, WA6 8EB.

Name	
Address	
.....	
.....	
ROUND	
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
TOTAL	
SCORES	
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AGF

PROGRAMMABLE JOYSTICK INTERFACE

for
Spectrum
or **ZX81**

ONLY
32.95
+£1.00pp

MICRODRIVE
COMPATIBLE

ABOUT OUR INTERFACE

The AGF Programmable Joystick Interface is a unique design offering the use of any Atari-compatible joystick with absolutely all software, whether it is cassette or ROM cartridge, with the Sinclair Spectrum or ZX81.

The hardware programmable interface requires no additional software and accurately replicates the keys of the computer in a manner which is responsive to absolutely ALL key reading methods, both BASIC and Machine Code.

The interface does not interfere with key operation and can therefore be used simultaneously with the keyboard.

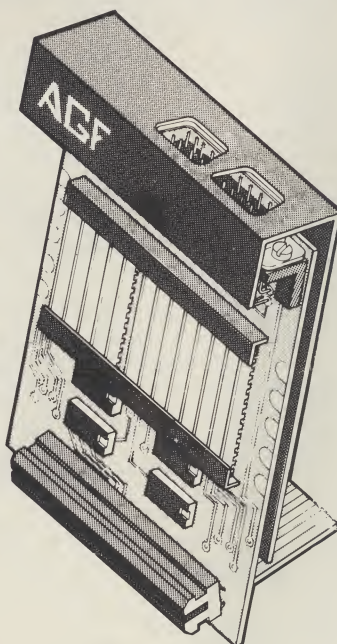
There is no need to remove the interface once fitted as the rear extension connector will accommodate further expansion, i.e. printers or RAM packs etc. This important feature avoids excessive wear to the expansion port.

The key replication principle pioneered by AGF means that your own programs can use eight directional joystick movement by utilising simple key reading BASIC.

Two joystick sockets are provided which share the same keys, for use with the majority of two player games. Several interfaces may be used on the same computer for multiple joystick applications.

The interface is programmed by a two digit code, which is looked up on a programming chart supplied, for each direction and firing button. The two numbers are then selected on a pair of leads which are clipped onto appropriately numbered strips on the interface.

Once configured this can be marked on a Quick Reference Programming Card for storing with the game. As the programming is *not* power dependent the interface retains the last configuration made and can be immediately used when next switched on.



KEY FEATURES

- ★ Programmable design gives TOTAL software support.
- ★ Accepts Atari, Competition Pro, Wico, Starfighter, Quick Shot, Le Stick etc.
- ★ Rear extension connector for all other add-ons.
- ★ Free demo program and instructions.

PACKAGE CONTENTS SUPPLIED

- Programmable Interface Module as illustrated, complete with clip-on programming leads.
- Self adhesive programming chart detailing how to define which key is simulated by UP, DOWN, LEFT, RIGHT, and FIRE. This can be fixed on to the case of your computer or if preferred the protective backing can be left on. The chart is made of a very durable reverse printed plastic and is extremely easy to read.
- One pack of ten Quick Reference Programming Cards for at-a-glance setting to your games requirements. The card allows you to mark the configuration in an easy to read fashion with space to record the software title and company name.
- Video Graffiti demonstration program which is written totally in BASIC to illustrate how all eight directions and fire can be read. This is also a useful high resolution drawing program.
- 12 months guarantee and full written instructions.

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Module or VIC 20, Commodore 64,
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ZX81 <input type="checkbox"/> ZX SPECTRUM <input type="checkbox"/> Please tick		FINAL TOTAL	
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EXPECT THE UNEXPECTED WITH THE TERRAHAWKS!

"Ha, ha, ha, ha, ha! So, these are the puny humans who think they can stop Zelda, queen of evil and ruler of the spaceways. They may have all the sophisticated equipment their insignificant earth science can provide but it's still no match for my mighty powers! They may be able to thwart my invasion plans from time to time — but there is no doubt about the final outcome. Zelda will be victorious!"

As nasty old Zelda has just informed you this is the Terrahawks team, pledged to defend the Earth from alien attacks. Each week on your TV screens the Terrahawks go into action — fighting off increasingly cunning attacks thought up by the evil Zelda.

We've got a couple of Philips G7000 video games systems to give away in our great Christmas Terrahawks contest — complete with the brand new games cartridge based on the TV series. All you have to do is watch the show, created by Thunderbirds man Gerry Anderson, and then answer our Terrahawks questions. Do it before Zelda gets to you!



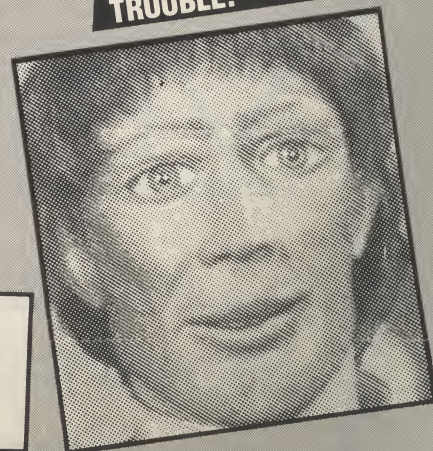
1 THIS PICTURE SHOWS ANOTHER STAR OF THE TERRAHAWKS SERIES SERJEANT-MAJOR ZERO — THE LOVABLE LEADER OF THE ZEROIDS. WHAT PARTICULAR POWER DOES HE HAVE WHICH HELPS GET THE TERRAHAWKS OUT OF TIGHT CORNERS?



2 CAN YOU NAME THE TERRAHAWKS TEAM PICTURED ABOVE?

3 WHO, OR WHAT, IS HUDSON?

4 THE CHIEF OF THE TERRAHAWKS IS A MAN OF MYSTERY. WHAT IS HIS SECRET? HERE'S A CLUE. HE OFTEN FINDS HIMSELF IN DOUBLE TROUBLE!

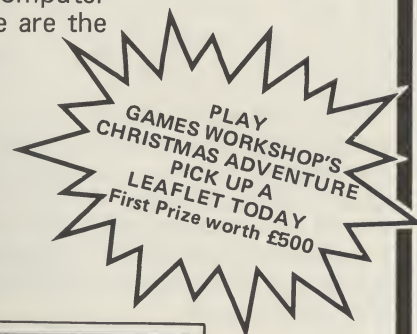


Send your answers on postcards only please, to Terrahawks, *Computer and Video Games*, Durrant House, Herbal Hill, London EC1R 5EJ. The closing date is December 16th, and normal *C&VG* competition rules apply. The editor's decision is final.

GAMES WORKSHOP

We are the computer and video games specialists in Birmingham, Manchester, Nottingham and Sheffield. The place to see the game of your choice demonstrated on request. The place where you can hear about the latest developments in computer and video games. Visit Games Workshop today, we are the people who know about the games you want to play.

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162 Marsden Way, Arndale Centre, Manchester
Tel: 061-832 6863. Monday-Saturday 9.30-5.30

95 The Moor, Sheffield
Tel: 0742-750114. Monday-Saturday 9.30-5.30

MAIL ORDER ONLY: 27/29 Sunbeam Road, London
NW10 6JP. Tel: 01-965 3713. Monday-Friday 9.30-5.30

HUNT THE RACING ENDURO CHAMPION

James Hunt was the last British racing driver to hold the coveted Formula One World Championship title — and we had hundreds of postcards telling us so after we launched our Activision Enduro competition a couple of issues ago. We delved into the sack of mail to pick out ten lucky winners who will all receive an Enduro cartridge for their Atari VCS. The winners are; Darren Hearn from Bristol; Michael Shipley who lives in Bucks; Sinead Corkery from Berkshire; Cad Delworth from Edinburgh; Michael Tomordy of Hertfordshire; Andrew Lloyd from Gloucester; Peter Clarke from Oxfordshire; Mr G. Davis from Wolverhampton; Paul Mogford from Gwent and N. Armstrong from Cheshire. Congratulations to all of you!

GET YOUR FREE GAMES HERE!

We've still got 20 FREE Imagine games tapes for the Vic-20. The first 20 postcards picked out of the sack will each receive a copy of Imagine's new Bewitched game. Don't delay, send your postcard in to Bewitched, Computer and Video Games, Durrant House, 8 Herbal Hill, London, EC1R 5EJ. Don't forget to include your name and address on your postcards!

Meanwhile Atari owners living in Portsmouth and Southampton can claim 100 FREE copies of Imagine's Leggit game. This runs on the Atari 400/800 and 600

XL and we'll be giving games tapes away to the first 100 people who send in the coupon below. Your entry must be postmarked from either one or the other of these two famous seaports to qualify. Cut out and send in the coupon marked Leggit, Computer & Video Games, Durrant House, 8 Herbal Hill, London EC1R 5EJ.

Name

Address

HERE'S YOUR CUE TO HELP FREDDY POT THE BLACK!

The game hangs in the balance. Everything depends on this final shot. If Freddy Frinkle, the man with the Golden Cue, misses this shot he will hand the title to the young pretender Simon Smooth.

The pressure begins to tell. The normally smooth green baize table suddenly starts to swim in front of his eyes and is transformed into a mind-boggling maze. He wipes his fevered brow and blinks his eyes — but the strange maze remains.

What can he do? Can you help Freddy clinch the championship? Simply find a path through the maze to the black — and pot it!



We've got 25 copies of the latest snooker game from new software house Visions — autographed by snooker champ and video games fan Steve Davis — up for grabs in our Pot the Black contest.

All you have to do is find your way through the snooker maze created by artist Ross Collins, solve the snooker riddle we've posed, and quickly send off the coupon with your maze solution, cut from the magazine, to the C&VG office. The first 25 correct answers out of C&VG's memory bin will receive a prize.

Visions' snooker program runs on five machines, the Spectrum, BBC B, Vic-20, Commodore 64 and the new Electron. There are five games tapes on offer for each machine — so don't forget to tell us which particular version you want if we pick you out of the bin. Send your entries to Computer and Video Games, Pot the Black, Durrant House, 8 Herbal Hill, London EC1R 5EJ.

THE QUESTION: Could there ever be a "break" of 162 in a game of snooker? Get your thinking caps on — solve the maze and answer the question and a snooker cartridge could be yours!

The answer to the snooker poser is ...

Name

Address

Computer you own

More Sensational Software for your Sinclair

**"The top quality
professional product
is what I've come to
expect from Mikro-Gen"**
'Home Computing Weekly'

Latest in the range from

MIKRO-GEN



Pat the Postman
Really original. All Pat has to do is collect parcels whilst avoiding obstacles – like cars, fires, trains, etc. Skill level and Hall of Fame.
48K Spectrum. £6.95



Deffendar
Earth is under attack from mutant aliens in an accurate implementation of a top arcade game – and one of the most difficult to survive in!
48K Spectrum. £6.95



Cruise Attack
Save the city from annihilation in this wonderful version of an arcade favourite. Nine skill levels, bonus points for attack ships.
48K Spectrum. £6.95



Nanas
Catch the bananas, miss the coconuts. Easy? Try it and see. Simple in concept, hilariously entertaining – it'll drive you bananas.
16K Spectrum. £5.95



Timequest
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LAST CHANCE TO WIN A CHEQUE-MATE!

Here's your second — and final — chance to enter our amazing Chess competition. All you have to do is read the rules below and then start planning your next move. Very soon a wonderful *Ambassador Chess* computer could be yours!

If you missed our last issue — how could you! — you won't know that the *Ambassador* is a powerful, expandable Chess computer.

It doesn't look much like a computer, more like a regular Chess board. That makes it extremely easy to use — the Chess pieces are moved in the conventional way on the board.

You don't have to bother about a keyboard to type in moves or squint at a screen to see what's going on. The board registers each move using its automatic sensory capabilities.

The *Ambassador* has 10 skill levels to cope with beginner and expert alike, and also has two analysis levels — useful for solving chess problems or playing correspondence Chess. All this can be yours. Read on!

"Curious, isn't it," said Alice. "What is?" barked the Red Queen irritably. "These computer things," replied Alice, "It seems that these days young people don't go adventuring through the Looking Glass like I did, but use these micro-computers instead." "Rubbish!" shouted the Red Queen, you know micro-computers don't really exist. They are just a figment of the White Knight's imagination!"

"It must be interesting to go through a computer screen," Alice continued unruffled by the Red Queen's outburst. "I wonder what Computerland looks like?" she added with a wistful look in her eye. "Be quiet girl!" the Red Queen was obviously getting annoyed. "Eat your dry biscuit!" Alice stood up and strode away from the blustering Queen. "Where are you going!" the Red Queen shouted after her. "To find the White Knight," Alice said forcefully, "I want to find out all about these micro-computer things!"

While Alice is off discovering the magical world of micro's we've got a little task for you too. And you could win a Chess computer!

Can you dream up an adventure game based on the theme of the Chess board — just like Lewis Carroll did in his second Alice adventure *Through the Looking Glass*?

What we'd like you to do is to look at your Chess board and imagine that it has been transformed into a magical land.

Dream up some characters to inhabit your Chess-board world, and a hero to move through it. Perhaps he's searching for a lost treasure or an imprisoned princess — or on a quest to destroy all evil on the board world. Use the standard moves for chess pieces as a basis for moving your characters about in Chess-world —



Illustration by Debbie Cook

or dream up some new moves of your own! All that we require is that you use the chequered board as the basis for your imagination to work on.

We'd like you to attempt to write a listing for your Adventure if you can — but it's not essential. If you like you can simply give us an idea, backed up with diagrams and documentation of how your game would work on a micro. And if you don't feel like writing an Adventure why not have a go at creating a graphic video-style game based on a Chess theme?

The winner will receive an *Ambassador Chess Computer* from Contempor-

ary Chess Computers, details of this amazing prize can be found elsewhere on this page. Runners-up will get Chess software for their computers. So don't forget to let us know what micro you own. The coupon below should accompany your entry.

As this is quite a complicated task we're giving you three months to come up with a great idea and send it to us. So you've got until January 16th 1984 to get your idea to us. Address your entries to Chess Competition, *Computer and Video Games*, Durrant House, 8 Herbal Hill, London EC1R 5EJ. The usual competition rules apply and the editor's decision is, as always, final!

Please enter my game in the C&VG/Contemporary Chess Computers Competition

Name

Address

Telephone number

Name of Game

Type of Game/video-style or Adventure

Computer your game runs on/computer you own

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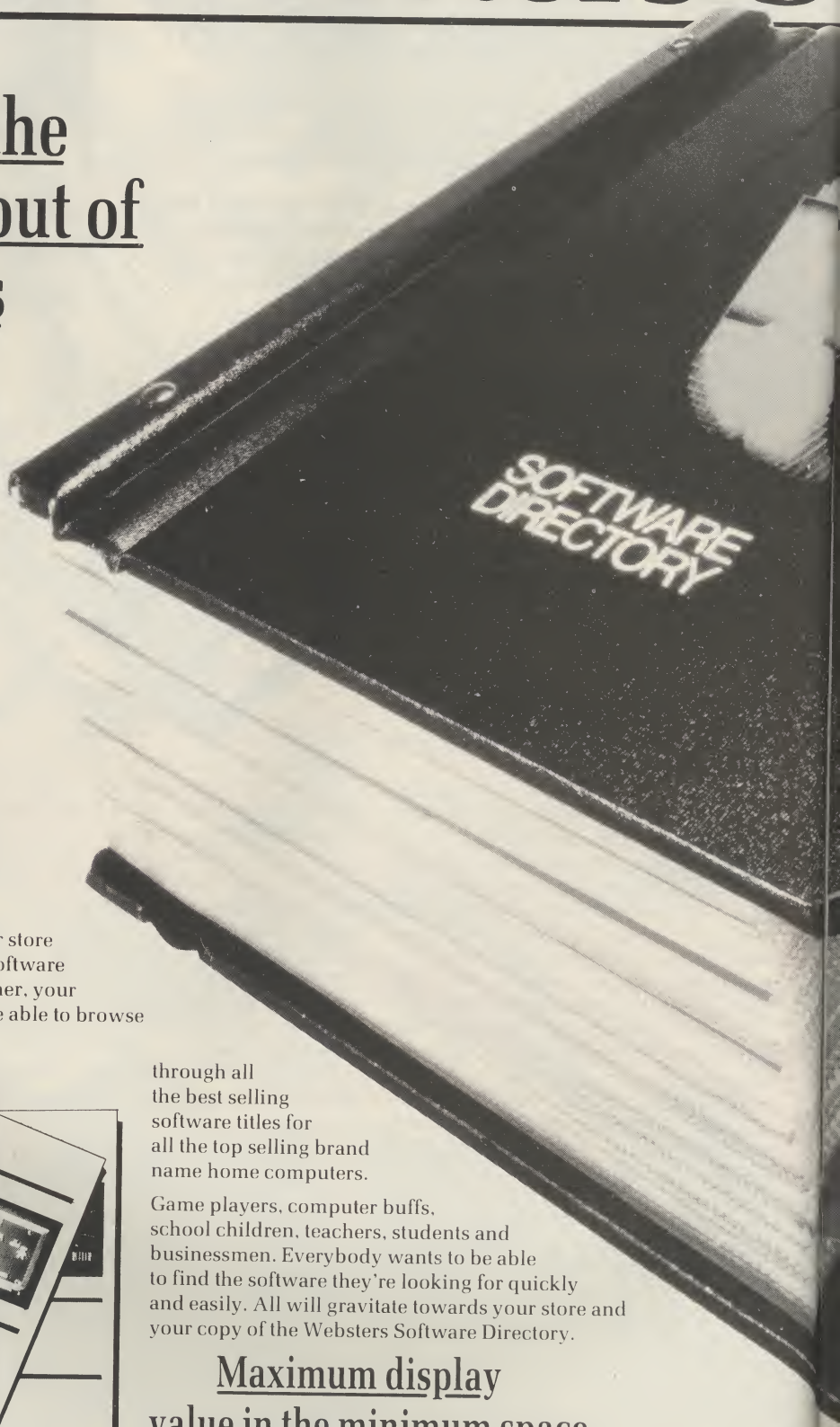
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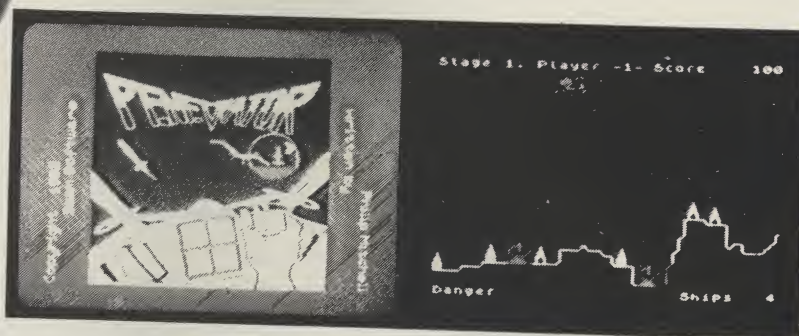
Software Directory



takes place in early 1984, the total will have risen to 400 pages. From then on, each copy of the Directory will be updated quarterly so that, at all times, in your store, consumers will be able to find all the information they need about personal computer software. There simply isn't a better or more effective way of showing the consumer what each program offers.

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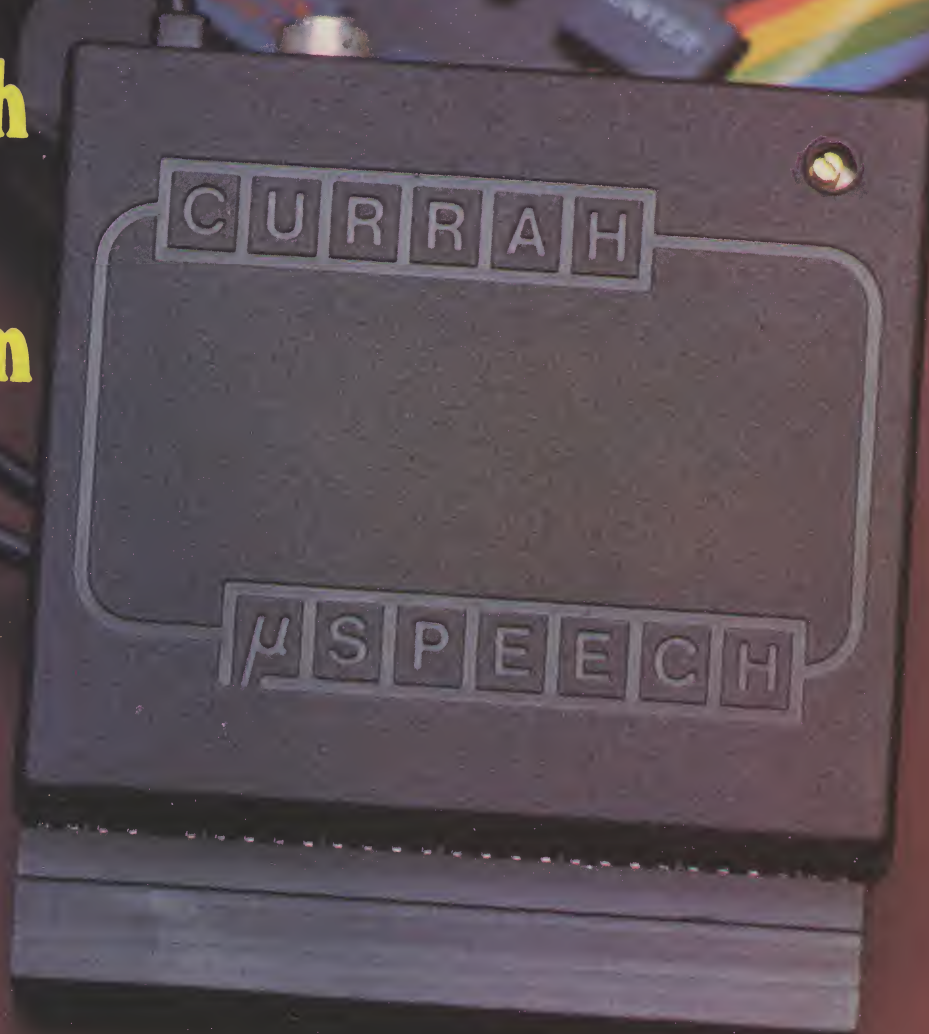
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FEBRUARY							SEPTEMBER							OCTOBER						
Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Mon	Tues	Wed	Thur	Fri	Sat
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Enemy Panzer divisions are advancing — and only you can halt them! You are a tank commander in control of a small group of defenders — protecting the last remaining bridge across the river. Your troops have managed to destroy all other bridges — but could not reach this one in time.

So your only hope is to blast the enemy tanks as they race across the bridge. You have positioned your tank on a vantage point overlooking the bridge and can blast the enemy at will. But beware — they'll be shooting back. You must adjust the angle of your gun before each shot to score direct hits on the enemy as they cross the bridge using different lanes. You have three lives to play with before the enemy overruns your territory. Can you hold back the armoured tide?

Variables

Life = lives left.

Shot = number of shells per tank.

Score = points scored.

Y = horizontal position of tank gun.

G = length of gun.

F = position where your tank is firing from.

T = where shot will land.

Le = length of shot.

Vert = vertical position of enemy tank.

Hor = horizontal position of enemy tank.

TANK


```

30 FOR COL=2 TO 12
40 CALL COLOR(COL,COL+1,COL+
1)
50 NEXT COL
60 CALL SCREEN(2)
70 CALL CLEAR
80 PRINT "((00 888 h
H AA A"
90 PRINT "PFXX h h pp
X pp p"
100 PRINT " xx 1 1 1 1
0 (( ("
110 PRINT " 00 8 8 8 A
P AA' "
120 PRINT " HH P P H H
P X1( "
130 PRINT " .. hYFMh A A
0 88 8 "
140 PRINT " xx 1 1 0
00 (( ("
150 PRINT " 00 8 8 H
H AA A"
160 PRINT "::::::
170 FOR I=1 TO 500
180 NEXT I
190 CALL CLEAR
200 CALL SCREEN(16)
210 FOR I=1 TO 12
220 CALL COLOR(I,2,1)
230 NEXT I
240 PRINT "WANT INSTRUCTIONS
(Y/N)?"
250 CALL KEY(0,K,S)
260 IF K<1 THEN 250
270 IF K=78 THEN 290 ELSE 24
20
280 GOTO 250
290 LIFE=3
300 CALL CHAR(54,"FFFF7E7E3C
3C1818")

```

```

310 CALL CHAR(55,"3C3C3C3C3C
3C3C18")
320 DIM P(21)
330 CALL COLOR(9,9,1)
340 DIM R(24)
350 SHOT=1
360 CALL COLOR(8,5,1)
370 CALL COLOR(1,4,4)
380 CALL SCREEN(8)
390 SCORE=0
400 CALL COLOR(13,7,15)
410 CALL COLOR(15,3,15)
420 CALL COLOR(16,3,15)
430 CALL COLOR(12,15,15)
440 CALL CHAR(120,"FFFFFFFFF
FFFFFFFFF")
450 CALL COLOR(11,13,15)
460 CALL COLOR(2,2,15)
470 Y=5
480 G=1
490 RANDOMIZE
500 CALL CHAR(113,"000000FF0
000000F")
510 CALL CHAR(112,"3C7EFFFFF
FFF7FFF")
520 CALL CHAR(145,"0000E0F0F
0E080FF")
530 CALL CHAR(146,"FF7F3F1F0
F070301")
540 CALL CHAR(152,"FFFFFFFFA
A55AAFF")
550 CALL CHAR(153,"FEFFFFFFF
EFCF8F0")
560 CALL CHAR(154,"000080")
570 CALL CHAR(101,"18183C3C7
E7EFFFF")
580 CALL CHAR(91,"183C3C3C3C
3C3C3C")
590 CALL CLEAR
600 CALL CHAR(135,"FFFFFFFFF
FFFFFFFFF")
610 REM BRIDGE
620 CALL HCHAR(11,1,135,32)
630 CALL VCHAR(12,8,135,4)
640 CALL VCHAR(12,16,135,4)
650 CALL VCHAR(12,24,135,4)
660 CALL VCHAR(12,32,135,4)
670 CALL HCHAR(8,1,45,32)
680 CALL HCHAR(7,1,120,32)
690 CALL HCHAR(6,1,120,32)
700 CALL HCHAR(4,1,120,32)
710 CALL HCHAR(3,1,120,32)
720 CALL HCHAR(9,1,120,32)
730 CALL HCHAR(10,1,120,32)
740 CALL HCHAR(5,1,45,32)
750 CALL HCHAR(2,1,45,32)
760 CALL HCHAR(1,1,135,32)
770 CALL CHAR(137,"7E7E7E7E7
E7E7E7E")
780 CALL CHAR(136,"3C3C3C3C3
C3C3C3C")

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TEL 09947 457/565

Brrr! Deep in the confines of the frosty blue maze Pengy is pushing his way out of trouble. Pengy's frozen wasteland is a random maze constructed of blue ice blocks raided by the dreaded Sno-bees. The sno-bee's sting is deadly, but Pengy can retaliate by squashing them with the ice blocks that he pushes around. Pengy is based on one of this year's arcade successes, and this version captures all the action and addiction of the original. Packed full of features, super smooth graphics, flashing and bonus blocks, double score bonuses, dizzy bees, and hours of entertainment!

ANY SPECTRUM.

PENGY



TUTANKHAMUN

48K SPECTRUM ONLY—The treasures of TUTANKHAMUN are awesome—but so are the creatures that guard them. Explore the pharaoh's tomb which is a very large series of scrolling mazes separated by locked doors. You have a limited time to unlock the doors with the keys, and escape with the treasure. Luckily you are armed with lazars and smart bombs as you will have to face a horde of guardian cobras, spiders, skulls, monsters and mummies. TUTANKHAMUN is what you'd expect from Micro-mania—fast, furious arcade action-packed full of arcade features: 100% machine code, fast, smooth, hires arcade action; tomb is over 40 "screens" long, opening doors, keys, treasures, maps, level selection, sound effects and tunes.



CYBOTRON



The fastest, meanest robot shoot-out game ever. Based on the arcade game that made Defender look tame, CYBOTRON is impossible to beat—only speed and skill can save you from the chaotic robots. Packed full of features: Four types of robots, bombs, multi-directional plasma lazars, up to 50 robots on screen, 100% machine code, a game that will test your reactions to the limit. ANY SPECTRUM.

keyboard only operation

SPECTRUM GAMES

100% machine code, fast, smooth, hires arcade action. Kempston, cursor key, joystick or keyboard operation. Games available direct £5.95 inc. p. + p. 24 HOUR DESPATCH, or from good software outlets. Trade enquiries invited. Good programs always wanted.

MICROMANIA

14 LOWER HILL ROAD, EPSOM, SURREY KT19 8LT

GHOST'S REVENGE



ANY SPECTRUM. Full arcade features; realistic gobbling, four coloured ghosts, dot and power pods, very intelligent chasing/running ghosts, eat blue ghosts for bonuses, tunnel, normal or INVISIBLE maze, 10 different selectable levels. 100% machine code action, excellent fast graphics, sound effects and tunes.


```

790 CALL CHAR(138,"FFFFFFFFF
FFFFFFFF")
800 CALL COLOR(14,13,4)
810 GOTO 1700
820 CALL KEY(0,M,S)
830 IF M=69 THEN 890
840 IF M=88 THEN 930
850 IF M=83 THEN 970
860 IF M=68 THEN 1010
870 IF M=32 THEN 1060
880 GOTO 1810
890 G=G+1
900 IF G>3 THEN 910 ELSE 920
910 G=3
920 GOTO 1360
930 G=G-1
940 IF G<1 THEN 950 ELSE 960
950 G=1
960 GOTO 1360
970 Y=Y-1
980 IF Y<3 THEN 990 ELSE 137
0
990 Y=3
1000 GOTO 1360
1010 Y=Y+1
1020 IF Y>27 THEN 1030 ELSE
1360
1030 Y=27
1040 GOTO 1360
1050 REM  USERS SHOOTING SEQ
UENCE
1060 IF SHOT=0 THEN 1360
1070 CALL GCHAR(T,Y+2,XX)
1080 FOR I=F TO T STEP -1
1090 CALL GCHAR(I+1,Y+2,R(I)
)
1100 NEXT I
1110 CALL VCHAR(T,Y+2,101,LE
)
1120 CALL VCHAR(T,Y+2,91)
1130 FOR J=F TO T STEP -1
1140 CALL VCHAR(J+1,Y+2,R(J)
)
1150 NEXT J
1160 CALL SOUND(1,1760,0)
1170 SHOT=SHOT-1
1180 IF XX=112 THEN 1200 ELS
E 1330
1190 CALL HCHAR(I+1,Y+2,120)
1200 SCORE=SCORE+20
1210 A$="SCORE="&STR$(SCORE)
1220 CALL COLOR(3,2,1)
1230 FOR I=1 TO LEN(A$)
1240 CALL HCHAR(1,I+2,ASC(SE
G$(A$,I,1)))
1250 NEXT I
1260 FOR I=1 TO 16
1270 CALL SCREEN(I)
1280 CALL SOUND(I,110*I,I)
1290 NEXT I
1300 CALL SCREEN(8)
1310 GOTO 1950

```

```

1320 XX=0
1330 CALL SOUND(200,-5,0)
1340 CALL HCHAR(I+1,Y+2,120)
1350 I=0
1360 CALL VCHAR(16,Y+2,32,8)
1370 CALL VCHAR(21,Y,138,4)
1380 CALL VCHAR(21,Y-1,32,4)
1390 CALL VCHAR(21,Y+4,138,4
)
1400 CALL VCHAR(21,Y+5,32,4)
1410 CALL VCHAR(16,Y+1,32,9)
1420 CALL VCHAR(16,Y+3,32,9)
1430 REM  USERS MOVING SEQUE
NCE & RAISING GUN SEQUENCE
1440 ON G GOTO 1450,1530,161
0
1450 CALL HCHAR(24,Y+2,138)
1460 F=20
1470 T=9
1480 LE=11
1490 CALL HCHAR(23,Y+2,137)
1500 CALL HCHAR(22,Y+2,136)
1510 IF Y+1=HOR THEN 2070
1520 GOTO 1810
1530 CALL VCHAR(23,Y+2,138,2
)
1540 F=17
1550 T=6
1560 LE=11
1570 CALL VCHAR(21,Y+2,137,2
)
1580 CALL VCHAR(19,Y+2,136,2
)
1590 IF Y+1=HOR THEN 2070
1600 GOTO 1810
1610 CALL VCHAR(22,Y+2,138,3
)
1620 LE=11
1630 T=3
1640 F=13
1650 CALL VCHAR(19,Y+2,137,3
)
1660 CALL VCHAR(16,Y+2,136,3
)
1670 IF Y+1=HOR THEN 2070
1680 GOTO 1810
1690 REM  ENEMY LANE SELECTI
NG
1700 K=INT(RND*3)+1
1710 IF K=1 THEN 1740
1720 IF K=2 THEN 1760
1730 IF K=3 THEN 1780
1740 VERT=9
1750 GOTO 1790
1760 VERT=6
1770 GOTO 1790
1780 VERT=3
1790 HOR=29
1800 REM  ENEMY MOVING ROUTI
NE
1810 HOR=HOR-1
1820 IF HOR=2 THEN 1950 ELSE
1840

```



```

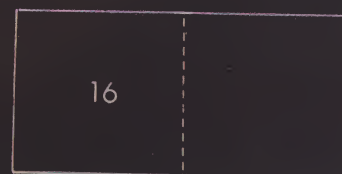
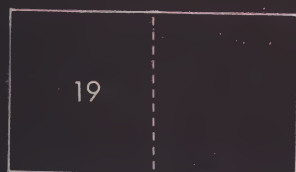
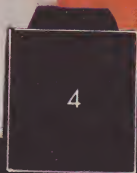
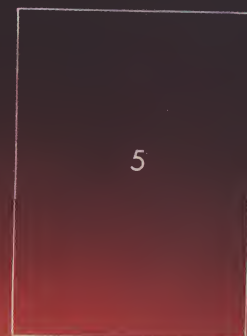
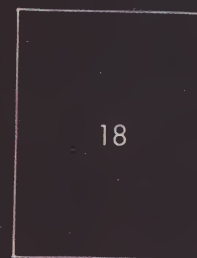
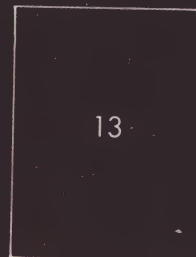
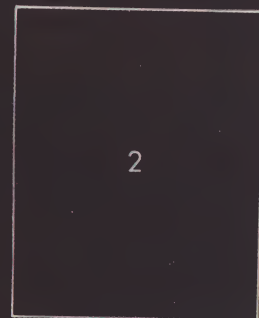
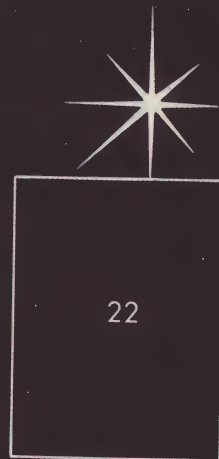
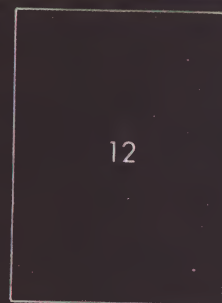
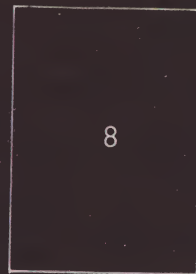
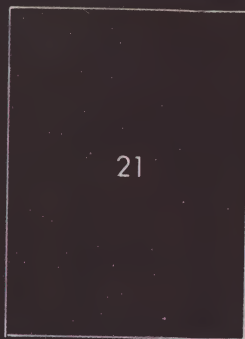
1830 GOTO 1950
1840 CALL HCHAR(VERT,HOR-1,1
13)
1850 CALL HCHAR(VERT,HOR,112
)
1860 CALL HCHAR(VERT,HOR+1,1
45)
1870 CALL HCHAR(VERT,HOR+2,1
20)
1880 CALL HCHAR(VERT+1,HOR-1
,146)
1890 CALL HCHAR(VERT+1,HOR,1
52)
1900 CALL HCHAR(VERT+1,HOR+1
,153)
1910 CALL HCHAR(VERT+1,HOR+2
,154)
1920 CALL HCHAR(VERT+1,HOR+3
,120)
1930 IF Y+1=HOR THEN 2070
1940 GOTO 820
1950 CALL HCHAR(VERT,HOR+1,1
20)
1960 CALL HCHAR(VERT,HOR+2,1
20)
1970 CALL HCHAR(VERT,HOR,120
)
1980 CALL HCHAR(VERT,HOR-1,1
20)
1990 CALL HCHAR(VERT+1,HOR+1
,120)
2000 CALL HCHAR(VERT+1,HOR+2
,120)
2010 CALL HCHAR(VERT+1,HOR+3
,120)
2020 CALL HCHAR(VERT+1,HOR,1
20)
2030 CALL HCHAR(VERT+1,HOR-1
,120)
2040 SHOT=1
2050 GOTO 1700
2060 REM. ENEMY SHOOTING ROU
TINE
2070 CALL HCHAR(VERT,HOR-1,1
20)
2080 CALL CHAR(114,"3C7EFFCF
CFFF7FFF")
2090 CALL HCHAR(VERT,Y+1,114
)
2100 CALL HCHAR(VERT,Y+2,120
)
2110 LE=0
2120 FOR I=VERT+2 TO 21
2130 LE=LE+1
2140 CALL GCHAR(I,Y+2,P(I))
2150 NEXT I
2160 CALL GCHAR(Y+2,21,B)
2170 CALL COLOR(3,10,1)
2180 CALL VCHAR(VERT+2,Y+2,5
4,LE)
2190 CALL HCHAR(21,Y+2,55)
2200 FOR I=VERT+2 TO 21

```

```

2210 CALL HCHAR(I,HOR+1,P(I)
)
2220 NEXT I
2230 CALL COLOR(3,2,1)
2240 LE=0
2250 LIFE=LIFE-1
2260 FOR I=1 TO 10
2270 CALL SOUND(10*I,110*I,I
)
2280 NEXT I
2290 IF LIFE<1 THEN 2310
2300 GOTO 1810
2310 CALL CLEAR
2320 FOR I=1 TO 8
2330 CALL COLOR(1,2,1)
2340 NEXT I
2350 PRINT "FINALLY YOU WERE
SHOT BY AN ENEMY TANK YOU
SCORED";"";SCORE
2360 PRINT "WANT ANOTHER GAM
E(Y/N)?"
2370 CALL KEY(0,K,S)
2380 IF K=89 THEN 290
2390 IF K=78 THEN 2410
2400 GOTO 2370
2410 END
2420 CALL CLEAR
2430 PRINT
2440 PRINT "PROG BY ANDREW L
EES AGE 13"
2450 PRINT
2460 PRINT "YOU ARE CONTROL
LING A TANK THE AIM OF THE
GAME IS TO SHOOT THE EN
EMY TANKS AND STOP THEM FR
OM CROSSING THE BRIDGE"
2470 PRINT "PRESS THE SPACE
BAR TO FIRE"
2480 PRINT
2490 PRINT "S MOVES YOU LEFT
& D RIGHT E MAKES YOU YOUR
GUN LONGER THEREFORE LE
NGTHENING YOUR RANGE SO THA
T "
2500 PRINT "YOU CAN HIT THE
HIGHER LANES&X DOES THE OPPO
SITE"
2510 PRINT
2520 PRINT "YOU CAN ONLY FIR
E ONE SHELL PER TANK AND YOU
HAVE TO HIT THE TURRET.
IF YUD MISS THE ENEMY WILL S
HOOT"
2530 PRINT "LUCKILY YOU HAVE
THREE LIVES"
2540 PRINT
2550 PRINT "PRESS ANY KEY TO
BEGIN"
2560 CALL KEY(0,K,S)
2570 IF K>0 THEN 290 ELSE 25
60

```

DLT's MONSTER CHALLENGE

USE YOUR NOGGIN AND WIN £10,000.

You might think you're a computer games wizard . . . I'm pretty good myself. But I've got news for you! I've discovered a second generation of computer games - and they're mind-benders. So if you're a spuddler you might as well turn the page now.

BECAUSE YOU WON'T STAND A CHANCE IN MY TEN-GRAND-SLAM.

If you can cope with a real challenge, try one of my suite of mind-stretching games. If you're really confident buy all six - it's cheaper.

All the games are independent puzzles but each has a clue. Unravel the clues and put them together to solve the riddle.

The first 10 who can will be finalists in my

TEN-GRAND-SLAM to win a cool £10,000.

You'll have to be an all-rounder because some of the games will test your intellect, some your general knowledge and one your skill with computers. But they're all fun and I guarantee you've never seen anything like them before.

Games like:

- A. Take the Strain - armed only with a compass and a map of Britain's railways, you must end up at the right section with a valid ticket.
- B. Air/Sea Missile - taxes not only your usual video skills, but also your mind. Bomb the enemy fleet through thick cloud and shoot down missiles before they shoot you down.
- C. Cambridge - take a trip around the city, punt on the Cam, stave off the pangs of hunger and try to reach your destination.
- D. Othello - test your powers of logic with this ancient game, playing against each other or against the computer.
- E. The Tower - escape from the perils of the tower and obtain the keys to escape from the dungeon.
- F. The Quiz - test your knowledge of Britain, playing against each other or the computer in a battle to beat the clock.

TEN-GRAND-SLAM entry instructions will be enclosed with every game purchased.

All Games are suitable for BBC, Dragon and Sinclair home computers.



TO: TWIG SYSTEMS SOFTWARE, 6 HIGH STREET, WENDOVER, BUCKS. ENGLAND.

My Name is:

My Address:

I own a computer Make

Model

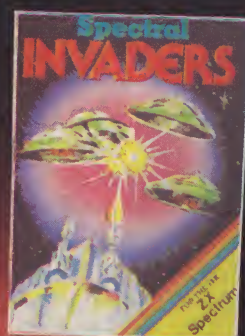
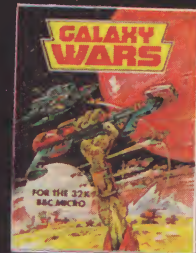
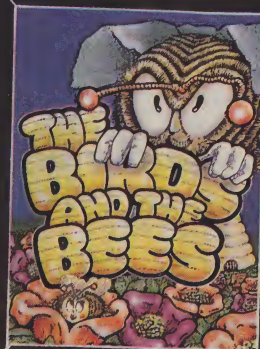
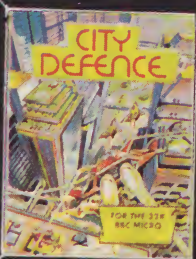
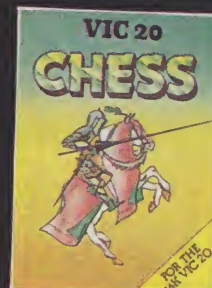
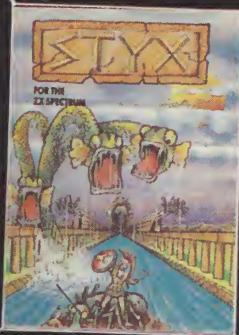
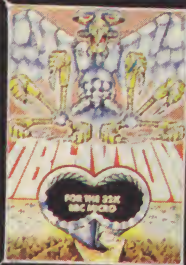
Cheque ☐ P.O. ☐ Access ☐ Barclaycard ☐

Access/Barclaycard No.

I wish to purchase the following cassettes
Prices quoted are inclusive of VAT.

- A. Take the Strain
- B. Air Sea Missile £9.00 each
- C. Cambridge or
- D. Othello £45.00 for
- E. The Tower the set
- F. The Quiz
- Post and Packing 1.00

I enclose my total remittance of £



IN YOUR HIGH ST. NOW!

MERRY CHRISTMAS from

BUG-BYTE SOFTWARE

MULBERRY HOUSE, CANNING PLACE, LIVERPOOL L1 8JB
☎ 051 709 7071


```

10 REM Breakout @ D.Ross 1983
11 RANDOMIZE
12 RESTORE
13 DEF FN a(x)=LEN (STR$ x)
14 DEF FN b(x)=(x/2=INT (x/2))
15 DEF FN c(x)=(x/2<>INT (x/2))
16 DEF FN d(x)=(x/2=INT (x/2))
17 DEF FN e(x)=(x/2<>INT (x/2))

20 DIM h(5): DIM h$(5,10): FOR
a=1 TO 5: LET h$(a)=":": IN
K: NEXT a: BORDER 5: PAPER 7: IN
K 0: FLASH 0: OVER 0: INVERSE 0:
CLS: REM initialise
25 LET last=0
30 GO SUB 9000: REM graphics
35 BORDER 5
40 LET sc=0: LET base=5
50 CLS: PRINT AT 0,2:"Score 0
00 Last 000 Ball 0
51 PRINT AT 1,0:"": FOR a=2 TO
17: PRINT AT a,31:"": NEXT a:
PRINT AT 18,0:""

60 PRINT AT 0,20:FN a+last:
70 OVER 1: PAPER 4: FOR a=0 TO
31: PRINT AT 0,a:"": AT 1,a:""
NEXT a
80 FOR a=2 TO 18: PRINT AT a,3
1:"": NEXT a: FOR a=31 TO 0 STE
P -1: PRINT AT 18,a:"": AT 19,a:
"": AT 20,a:"": AT 21,a:"": NEX
T a
90 PAPER 6: FOR a=2 TO 17 STEP
2: FOR b=0 TO 30: PRINT INK 6: A
T a,b:"": AT a+1,b:"": NEXT b:
NEXT a: REM fill play area
110 REM now draw bricks
119 LET ball=1
120 FOR a=20 TO 25: FOR b=2 TO
16 STEP 2: PAPER 5-(21-a): PRINT
AT b,a:"B": AT b+1,a:"C": NEXT b
NEXT a
130 PAPER 0: INK 7: FOR a=20 TO
25: PRINT OVER 0: AT 18,a;a-19:
NEXT a
140 PAPER 4: INK 0: OVER 0: PRI
NT AT 0,27-FN a(ball),ball
141 PAPER 4: INK 0: PRINT AT 20
,5:"Press ENTER to serve"
142 IF INKEY#<>CHR$ 13 THEN GO
TO 142
143 PRINT PAPER 4: INK 6: AT 20,
0:""
145 LET bx=INT (RND*15)+2: LET
by=1: LET ym=1
146 LET xm=1: IF RND>.5 THEN LE
T mx=-1
150 PAPER 2
160 PRINT AT base,0:"D": AT base
+1,0:"E"
161 LET x$=INKEY$: IF x$<>"7" A
ND INKEY#<>"6" THEN GO TO 170
162 PRINT PAPER 6: INK 6: AT bas
e+(x$="7"),0:"": LET base=base+
(x$="6" AND base(16)-(x$="7" AND
base>2)
163 PRINT PAPER 2: INK 0: AT bas
e,0:"D": AT base+1,0:"E"
170 PRINT PAPER 6: INK 1: AT bx,
by:"A"
180 LET ox=bx: LET oy=by
190 LET bx=bx+xm: LET by=by+ym
195 IF oy=0 THEN FOR a=1 TO 10:
DEEP .01,0: OUT 254,a: NEXT a:
BEEP .01,0: GO TO 1000
200 IF bx=1 OR bx=16 THEN LET b
x=ox: LET by=oy: LET xm=-xm: GO
TO 190
201 IF by=30 THEN LET ym=-ym
210 IF ATTR (bx,by)=16 AND by=0
THEN LET ym=-ym: LET by=oy: LET
bx=ox: GO TO 190
220 IF ATTR (bx,by)<>54 AND by>
19 THEN BEEP .01,40: LET sc=sc+1
by-19: PAPER 4: PRINT AT 0,11-F

```



BY DANNY ROSS

RUNS ON A SPECTRUM IN 48K

BREAK